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INEFFICIENCY OF MOST OF THE COMMONLY USED SKIN ANTISEPTICS *

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AND
HENRY B. SUTTON, M.D.
ITHACA, N. Y.

The antiseptics, judged by their influence in preserving life and health, may fairly be considered among our most important therapeutic agents. Practitioners in all branches of medicine, from those engaged in medical diagnostic puncture and hypodermic therapy to obstetricians and specialists, use skin antiseptics in one form or another. Yet there has been no important advance in skin preparation methods by the profession of this country in more than fifteen years. This statement is based on definite information: replies to a questionnaire sent to representative surgeons show that more than 70 per cent depend on the iodine method essentially as introduced by Grossich,[1] and most of the remainder depend on methods equally unreliable in the presence of certain resistant, spore-forming bacteria. An attempt was made fifteen years ago to show the inefficiency of the iodine methods and the fallacies involved in their use.[2] The results of some of the many investigations of the iodine method are given in table 1.

The majority of the medical profession seem entirely satisfied with present methods. One says, "We do not seem to have skin infections;" others, "We have practically no infections." Brewer [3] also, eleven years ago, found in reply to a questionnaire regarding infection that the majority of surgeons felt that they had "practically none." Some surgeons, either less fortunate or more careful in the scrutiny of their end results, give quite a different report. From one of the best organized hospitals we get the report of eight cases of streptococcus infection appearing in clean wounds, serious in that the deeper layers of the wounds were involved; from another hospital, a report of death from tetanus following a clean operation for appendicitis; in another instance, two deaths from streptococcus infection and several severe infections in the maternity ward; in another, two fatal cases from Welch bacillus infection of unknown origin, following a perfectly clean operation. Another prominent surgeon says: "About a year ago we had a bad flurry of infections. Never determined the cause." Another reports fourteen deep infections in a large series of operations, in two of which the wounds burst open and the fascia was lost; another, fatal pyemia from low grade infection in a clean case.

Probably there are no fatal infections in many hospitals for years at a time, yet these quotations taken from 206 replies by surgeons of national and international reputation show that such accidents are still possible. The vital statistics division of the New York State Board of Health informs us that in four years there have been twelve deaths from tetanus following apparently clean operations, all of them abdominal except: one two weeks after thyroidectomy; one eighteen days after operation for varicocele and hydrocele; one following a vaginal hysterectomy and perineorrhaphy. Goff's [4] recent report, summarizing 2,755 operations, from the Woman's Hospital of New York, is most striking. Nine different surgeons had faulty union, due mainly to infection, in from 7.8 to 26 per cent, with one surgeon's work uniformly clean. The average incidence of faulty union was 12.1 per cent with absorbable sutures; with nonabsorbable sutures this was reduced to 4.3 per cent.

In most instances, the cause of infection is sought in catgut, sterilization of dressings and operative material, the noses and throats of the operating room staff (which are practically always infected at all times), and everything except the most frequent source of infection, the skin of the patient. The idea seems prevalent that the skin of the patient can never be made bacteria free. This we have not found to be the case. In sixteen clean operative cases in which a narrow strip of skin has been excised, in which fresh neutral acriflavine was used as the final antiseptic, there was no growth in any instance. In fifteen other cases, prepared in exactly the same way except that a variety of other antiseptics considered standard in many hospitals were used, we found growth in 51 per cent of the cases.

The inefficient clinical results reported by sixteen surgeons, all of whom made definite statements regarding infection, of 215 (our questionnaire, 206; Goff, nine), we believe indicate the need of a change of methods. If the small percentage of fatal infections quoted had occurred in the families of surgeons who reported practically no infections or gave no definite report, it is possible that it might have influenced them to seek other and more efficient methods. The laboratory is the court of final appeal in testing the efficiency or inefficiency of skin antiseptics.

SURFACE STERILIZATION

In the study of skin antiseptics we can eliminate at the start those which are not efficient under conditions of perfect contact. If an antiseptic will not kill bacteria on the surface of a rubber glove, it is evident that not much can be expected of it if it is used on the skin. The

* Read before the Section on Pharmacology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Grossich: Zentralbl. f. Chir., 1908, No. 44, p. 1289; Berlin. klin. Wchnschr. **46**: 1934, 1909.
2. Tinker and Prince: Surg. Gynec. Obst. **12**: 530, 1911.
3. Brewer, G. E.: Studies in Aseptic Technic, J. A. M. A. **64**: 1369 (April 24) 1915.
4. Goff, B. H.: Surg. Gynec. Obst. **41**: 728 (Dec.) 1925.

skin, with deep hair follicles, sebaceous secretion and the pores of the sweat and sebaceous glands, offers many difficulties. In studying antiseptics, we have used strips of rubber glove dipped into cultures of the organisms which it is desired to test. After the culture has dried on, it is immersed in the antiseptic solution, which is also allowed to dry on, as in the use of antiseptics on the skin. This gives nearly perfect conditions of contact and lack of possibility of penetration. It should be evident that when germs invariably grow under these ideal conditions of contact we cannot hope that they will be efficient for skin disinfection. The results of these tests are given in table 2.

DISINFECTION OF THE DEEPER EPIDERMIS

The value of antiseptics for killing bacteria in the deeper layers of the epidermis, the skin folds and under ferred to mediums) were drawn forcibly through the folds of the skin and under the nails. The results were similar to those in which the epidermis was scraped. Acetone and a cresol preparation, and potassium mercuric iodide are used by relatively few surgeons; hence they were not given so thorough a test. Acetone and a cresol preparation does not kill *B. pyocyaneus*, one of the non-spore formers, on rubber strips; hence it was not considered necessary to test it with more resistant germs. Potassium mercuric iodide also failed to kill *B. pyocyaneus* on rubber strips, and for the same reason was not tested further.

PENETRATION OF SKIN ANTISEPTICS

Penetration is necessary in order to get contact with bacteria in the deeper layers where hair follicles and sweat and sebaceous glands dip down into the true skin,

TABLE 1.—*Comparison of Surface and Deep Skin Sterilization (Human Skin—Broth Cultures)* *

	Scrapings					Skin Excised				
		Growth		Sterile			Growth		Sterile	
	Tubes	No.	%	No.	%	Tubes	No.	%	No.	%
Scrub alcohol-ether mercuric chloride (Robb: Surg. Gynec. Obst. 7:324, 1913)	11	1	9	10	91	..	..	..	..	..
Iodine removed (Robb)	21	9	43	12	57	..	..	..	..	..
Iodine left on (Robb)	21	3	14	18	86	..	..	..	..	..
Iodine (Neate: Mil. Surgeon 2:200, 1911)	9	3	33+	6	66+	14	7	50	7	50
Iodine (Browning: Brit. M. J. 1:562, 1918)	..	..	..	..	..	30	18	60	12	40
Iodine (Decker: Deutsche med. Wehnschr. 37:1078, 1911)	9	4	45	5	55	4	4	100	..	..
Iodine (Turner and Catto: Lancet 1:783, 1911)	..	..	..	..	..	32	3	10	29	90
Iodine (Bovee: Am. J. Obst. & Gynec. 70, No. 1, 1914)	36	6	16	30	84	7	4	59	3	41
Iodine (Scott and Hill: J. Urol. 14:135, 1925)	12	3	25	9	75	4	1	25	3	75
Totals	119	29	25	90	75	91	37	40+	54	60—

* The poor showing of iodine. Results of nine investigators, some of them ardent advocates of the use of iodine. Condition comparable to use of chloroform for over twenty years, in spite of abundant evidence of superior safety of other anesthetics.

TABLE 2.—*Rubber Strip Method: Efficiency of Antiseptics Compared* *

	Subtilis	Staph. albus	Staph. aureus	B. coli	Strep. Hem. Blood Broth	Strep. Hem. Plain Broth	Pyocyaneus	Anthrax Veg.	Anthrax Spores	Tetanus	Welch	
Alcoholic iodine, 5%	100	0	0	0	100	0	66	33	100	0	0	5
Benzine iodine, 5%	100	0	0	0	75	0	100	33	100	66	33	7
Trinitrophenol, 5%, 95% alcohol	100	0	50	0	0	0	66	100	100	0	66	6
Harrington's mercuric chloride solution	24	0	0	0	100	0	33	0	100	75	0	5
Mercurochrome, 5%, 50% alcohol	90	0	0	0	75	0	66	0	100	66	33	6
Acriflavine, 5%, 50% alcohol	0	0	0	0	0	0	0	0	100	0	0	1
Mixture of neutral acriflavine and gentian violet, 5%, 50% alcohol	0	0	0	0	0	0	50	0	100	0	33	3
Lime and soda paste	0	0	0	0	0	0	0	0	0	0	0	0
	5	0	1	0	4	0	6	3	7	3	4	

* Results of use of antiseptics superficially under conditions of perfect contact of antiseptic with bacteria. More than 1,500 cultures were made, tests about equally divided among eight antiseptics and eleven bacteria. Numbers in marginal right hand column indicate total number of organisms which were not killed out of the eleven tested. Numbers on lower margin show relative resistance of organisms tested to eight antiseptics used. With failure to get antisepsis under perfect conditions, of course nothing could be expected under the difficult conditions of deep skin disinfection. The ciphers indicate no growth; figures in the body of the table, percentage in which growth occurred.

and about the nails should be tested only with nonpathogenic organisms. Fortunately, there are several resistant, spore-forming organisms available which are harmless to man. In this series we have used broth cultures of *B. subtilis*, smeared over the skin, into the skin folds and under the nails. Efficiency in killing this germ has been tested by moistening the skin with sterile water and scraping deeply into the epidermis with a sterile scalpel. Cultures were made with loops of this material, containing epidermis deeply stained with such antiseptics as iodine, trinitrophenol, mercurochrome-220 soluble and the aniline dyes. With alcoholic iodine and benzine iodine there was growth in 100 per cent of the tests; with mercurochrome, in 90 per cent of the tests. With several of the aniline dyes and chlorinated lime paste there was no growth in 100 per cent. To test efficiency under the nails and in the folds of the skin, pieces of sterile string (later pieces of sterile pipe cleaners were used because they are more easily transas shown in the accompanying chart. We have studied penetration with only a few of the more promising of the commonly used antiseptics and with neutral acriflavine. To test penetration we have excised a narrow (about 3 mm.) strip of skin from the operative wound in fifty-four cases. With Harrington's mercuric chloride solution the skin was found free from growth in thirty of thirty-three cultures made from the skin of five patients. With dichloramine there was growth in all of the thirty-six cultures in six cases, although superficial sterilization was perfect in all. With chlorinated lime there was no growth in sixteen of eighteen cultures from four patients. The excised skin from thirty-nine patients was free from growth in every instance in which a fresh solution of 5 per cent neutral acriflavine was used. When more than a week old, acriflavine solution was found unreliable. Skin was taken from several parts of the body, including those difficult of disinfection; for example, from the pubic region in

a hernia operation where the hair and glands are abundant.

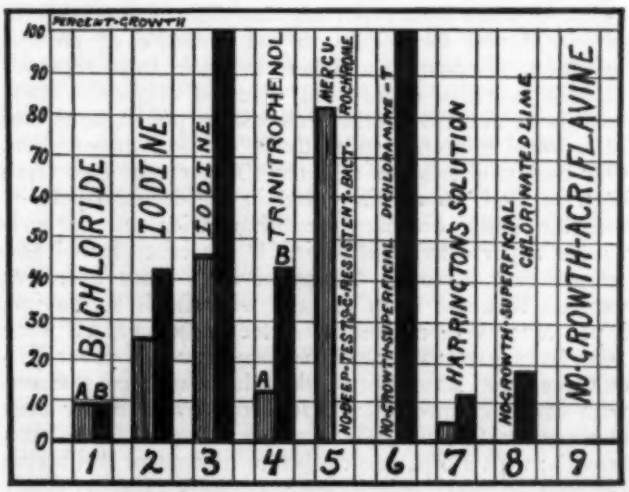
The character of the solvent used is apparently of some importance, we de not know exactly how great. The addition of acetone to alcoholic solution of mercurochrome gives a slightly greater value in killing certain bacteria, not enough to make it comparable in value with chlorinated lime paste or the dyes, however. Reference to table 2 will show that benzine iodine, 5 per cent, gives poorer results than 5 per cent alcoholic iodine in the case of certain bacteria, and better in others. On the whole, the alcoholic iodine seems to have the advantage, killing in six instances out of eleven, while benzine iodine kills pathogenic bacteria in only four of eleven instances. Neither of the iodine preparations shows results which in any way warrant their widespread use when other and much more efficient antiseptics are undoubtedly available. Doubtless dryness or wetness of the skin also influences penetration. We have not been able to devise any method of checking the relative value of an antiseptic in the presence of a wet and dry skin, however. The antiseptics should, of course, be given the best conditions for penetration, after thorough scrubbing with soap and water, shaving, and also removal of skin fats and any contaminating, greasy or oily substance by the use of ether and alcohol. The influence of much oil in the skin is strikingly shown with dichloramine. It always kills superficial bacteria, as has been mentioned, but has no influence on deep bacteria. Not only does it not kill, but the oil in which it is used so fills the deeper layers of the skin that Harrington's mercuric chloride solution is ineffectual, even when preceded by ether. Apparently only a thorough soap and water scrub removes so much oil. We believe that excision of a narrow strip of skin gives more reliable results than scraping the edge of the wound, as suggested by Farr.[5] Further experimental study with regard to the solvents used, as well as the antiseptics employed, should give valuable information as to the penetration of antiseptics.

EFFICIENCY OF ANTISEPTICS IN PRESENCE OF BLOOD

Many conditions arise in which it is necessary to use antiseptics in the presence of blood. Skin disinfection is frequently necessary in accident cases, and it is possible that the presence of blood in considerable amount influences the effect of the deeply penetrating dyes in operative wounds. Moisture and dilution when blood is present also probably influence the action of most antiseptics, as has been mentioned in connection with the penetration of antiseptics. Our experience in studying the effect of eight different antiseptics on ten pathogenic organisms shows that it is almost as difficult to kill *Streptococcus hemolyticus* in the presence of blood as many resistant, spore-forming organisms. On the other hand, this organism is among the most easily killed in broth culture. It is interesting to note that several relatively feeble antiseptics kill streptococcus in blood, while they fail with resistant organisms in practically every instance. Mercurochrome, for example, failed with six out of eleven organisms, but it did kill streptococcus in the presence of blood in 75 per cent of the cases. Todd [6] states that mercurochrome at acidity near normal has feeble antiseptic properties, which, if true, would lessen the value of mercurochrome with the blood's alkalinity. Twenty-five per cent failure is not a good showing, but it is better than tincture of iodine with 100 per cent growth in this instance. Trinitrophenol also fails with six of eleven organisms, but in our experience always killed streptococcus in the presence of blood. The dyes, both acriflavine and a mixture of neutral acriflavine and gentian violet, killed streptococcus in blood in all cases, whether in weak aqueous solution or in weak or strong alcoholic solution. Probably the growth of many other bacteria would be similarly influenced by blood, but this work is so time consuming that we have not been able to test other organisms. Our attention was called to *Streptococcus hemolyticus* because of an outbreak of infection in the maternity ward of one of our hospitals.

SELECTIVE ACTION OF ANTISEPTICS

The fact that an antiseptic inhibits the growth or kills certain forms of resistant bacteria does not signify that it will inhibit or kill all bacteria, even if closely related.[7] As noted in a previous paper,[8] this was observed many years ago in connection with the inhibitive effect of metallic silver on the growth of anthrax, which germ is



Superficial and deep skin sterilization: shaded columns, superficial; solid columns, deep. Numbers 1 to 4 represent work of other investigators: 1 A, Robb (Surg. Gynec. Obst. **7**: 324, 1913); 1 B, Lockwood (Aseptic Surgery, London, 1908, quoted by Turner and Catto: Lancet **1**: 733, 1911); 2, summarizes table 1; 3, Decker (Deutsche med. Wchnschr. **37**: 1078, 1911); 4 A, Scott, W. W., and Hill, J. H. (J. Urol. **14**: 135 [Aug.] 1925); 4 B, Farr (footnote 5).

commonly taken as the standard of resistance in studying antiseptics. While anthrax leaves a clear zone around metallic silver in plate culture, as do many other less resistant bacteria, *B. pyocyaneous* grows directly up to the silver. Selective action has been mentioned in this paper in connection with a number of other antiseptics. For example, trinitrophenol inhibits or kills streptococcus in the presence of blood, although it fails to kill six out of eleven common bacteria, while other antiseptics that kill most of the bacteria that trinitrophenol fails to kill will not destroy the streptococcus in blood. This brings out the important fact that it is relatively easy to prove the negative with regard to most antiseptics. Each antiseptic of which we desire knowledge must be tested by all the ordinarily encountered bacteria. This should include a number of pathogenic bacteria of relatively infrequent occurrence if we are to avoid the yearly occasional tragedies of death from tetanus or the Welch bacillus. The effects of the antiseptics are highly erratic, and no amount of abstract

5. Farr, C. E.: Ann. Surg. **73**: 13 (Jan.) 1921.
6. Todd, A. T.: Lancet **2**: 1017 (Nov. 14) 1925.
7. Churchman and Michael: J. Exper. Med. **16**: 822, 1912.
8. Tinker, M. B., and Sutton, H. B.: Ann. Surg. **82**: 640 (Oct.) 1925.

reasoning about them helps materially to predict their value. We must follow John Hunter's dictum, "Try and see." It is also important that the virulence and resistance of the strain of bacteria under consideration be taken into account. This was shown in a recent series of experiments in which we found that the sample of anthrax which had been used to test the value of a number of antiseptics did not kill guinea-pigs as it would if of normal virulence.

THE ANILINE DYES

The aniline dyes have never come into general use for skin disinfection in spite of the evidence of germicidal power, penetration,[7] low toxicity,[9] harmlessness to instruments and materials, and excellent outlining of the field of operation. They have been used from the start in conditions offering certain difficulties greater than those in skin disinfection. First introduced in 1886, satisfactory results have been reported in the treatment of eye, ear, nose and throat, genito-urinary, and many other conditions. Disinfection with the dyes in obstinate, chronic infection with diptheroid organisms which had resisted all the usual antiseptics has been reported, also disinfection of joint cavities,[10] and the pleura in the presence of chronic infection. Browning and his associates have reported valuable work in disinfecting infected wounds. There have been numerous other interesting publications, but little with reference to methods of skin disinfection. Our own studies show cultures 100 per cent free from bacteria, both superficially and in the deeper layers of the skin under ordinary conditions with neutral acriflavine 5 per cent solution in 50 per cent alcohol and 10 per cent acetone. Strips of skin from operative wounds that had been painted with fresh acriflavine, 5 per cent, were excised in sixteen cases and all were free from growth. Our own experiments cover 216 cultures from scrapings of skin that had been smeared with broth cultures of *B. subtilis*. With 5 per cent neutral acriflavine, 100 per cent were free from growth; with a 5 per cent mixture of neutral acriflavine and gentian violet, seventy-eight cultures (100 per cent) showed no growth. Neutral acriflavine is very expensive, but if a small swab is used in painting the skin, it is possible to disinfect the field of operation with 3 or 4 drachms of solution in less extensive operations. We believe that probably further studies of the aniline dyes will show other combinations much less expensive and equally efficient. The results thus far are certainly more promising than with any other group of antiseptics that we have tried. We are not interested in promoting the use of any antiseptic and have received little aid from the National Aniline Company, which has several times ignored letters of inquiry and requests for prices. We believe it likely that other products may be discovered equally efficient, less expensive, and marketed by firms interested in medical products.

WAY TO BETTER RESULTS

The way to better results is through constant, careful scrutiny of our work. The man who is satisfied that his results cannot be improved will not investigate his inefficient antiseptics, whether his infections are 5 per cent or one in 5,000. Teaching medical students antisepsis in the laboratory[11] and other fundamentals of surgery, rather than the diagnosis and treatment of conditions which they will rarely meet, will do much to make them less ready to accept the extravagant claims of advertisers of antiseptics, whose phenol coefficient is remarkably great, but which will not kill resistant bacteria under clinical conditions. We have also taught several classes of nurses practical antisepsis by methods such as are described in this paper. Many are keenly interested and we believe the results are shown in their work. Nothing is more conducive to care in technic on the part of the hospital staff than to know that the technician is likely to appear at any time to test the preparation of supplies, the skin of the patient, or their own hands. Every well equipped hospital, especially the teaching hospitals, should take up this work. There are too many intensely practical problems awaiting solution to be solved by any single group. Few advances have come in recent years that have not been based on studies in the laboratory, and we believe that the study of the antiseptics is just well begun. And, perhaps most important of all, there must be cooperation of the laboratory workers, such as are represented in this section.

CONCLUSIONS

1. The clinical results of which we have knowledge, from a considerable number of the best organized hospitals in this country, show that serious infections in clean wounds are by no means a thing of the past, and since bacteria can be grown almost invariably from skin prepared by the antiseptics adopted as standard in these hospitals, we believe that the inefficiency of these antiseptics should be considered as a possible cause of their troubles.

2. Laboratory studies by a considerable number of investigators have indicated the inefficiency of iodine, the most widely used of the inefficient antiseptics.

3. Personal study of more than 1,550 cultures (results in most instances confirmed by others) have demonstrated that iodine, trinitrophenol, Harrington's mercuric chloride solution, mercurochrome-220 soluble and potassium mercuric iodide will not kill most of the resistant, and some of the less resistant, pathogenic bacteria under conditions of perfect contact, and are still less efficient if penetration is required.

4. Selective action of antiseptics must be considered. Because an antiseptic kills one variety of bacteria, even a resistant one, does not prove that it will kill all, even less resistant germs, unless all are tested.

5. The aniline dyes seem to deserve further investigation and probably wider use on the basis of apparent germicidal power, penetration, low toxicity, harmlessness to instruments and supplies, and excellent outlining of the field.

6. More efficient antisepsis may be hoped for through laboratory teaching of medical students and nurses; more careful scrutiny of technic, and cooperation of laboratory workers.

Savings Bank Building.

9. Churchman, J. W.: J. Urol. **11**: 9 (Jan.) 1924.
10. Churchman, J. W.: Gentian Violet in the Treatment of Purulent Arthritis, J. A. M. A. **75**: 583 (Aug. 28) 1920.
11. Tinker, M. B.: Teaching the Principles of Surgery, J. A. M. A. **55**: 1430-1434 (Oct. 22) 1910.

ABSTRACT OF DISCUSSION

DR. HUGH H. YOUNG, Baltimore: Our experience with tincture of iodine agrees with that of Dr. Tinker. It is, undoubtedly, very irritating, particularly in certain tender portions of the body. We have tested out various forms of antiseptics and have come to the use of an acetone-alcohol-mercurochrome solution as the most efficient. The tests of Hill and Scott show that it is distinctly better than tincture of iodine, trinitrophenol and potassium mercuric iodide. Extensive experiments with mercurochrome in salt solution and serum for local antiseptic and intravenous use have

proved its great value in thousands of cases. In 50 per cent serum it kills the staphylococcus in a strength of 1 per cent in one minute, and the colon bacillus and other bacteria in strengths of from 1:200 and 1:500. Our experiments have shown that when introduced intravenously it is possible to sterilize local anthrax infections with a 1 per cent solution in doses of 5 mg. per kilogram. We have not tested it against anthrax spores because they do not come into the problem of wound sterilization, and spores of the hay bacillus, which is a nonpathogenic organism, are in no way concerned in the problem of prevention of wound infections. Tinker has used an alcoholic solution of mercurochrome. This, I feel, is not a fair test in that mercurochrome is dissolved poorly in alcohol, and I have found the solution composed of acetone, alcohol and mercurochrome far more efficient. Scott and Hill have reported a brilliant series of results in which this antiseptic has been used for the disinfection of the skin in animals and human beings, and in the combating of wound infections. No irritation or desquamation or postoperative dermatitis has been encountered, and it has the great advantage that the stain remains in situ for five to six days, during which time it acts as a preventive against infection in the wound and long stitch sinuses. The experiments of Hill and Scott do not agree with those of Dr. Tinker in that it is possible to kill both the colon staphylococcus and pyocyaneus in three minutes with mercurochrome. The major problem in the selection of antiseptics and germicides is to get an efficient drug that will not do injury. There are many germicides far more powerful than mercurochrome, just as there are many far more powerful than surgical solution of chlorinated soda, such as mercuric chloride and silver nitrate; but these have long since been discarded in the treatment of wounds because of their serious irritating, toxic and destructive effects. It is useless to insist on a drug that will kill spores of anthrax when they are practically never encountered in the field of surgical operations, and the spores of the hay bacillus furnish no problem because they are nonpathogenic.

MENACE OF THE SLIGHTLY POSITIVE WASSERMANN REACTION *

JAMES HERBERT MITCHELL, M.D.
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Industrial development in the United States has resulted in a marked degree of standardization of thought and action. Faith in card indexes, "systems" and efficiency methods has been fostered by advertising and by articles on the subject in the popular magazines. The facts and the near-facts of the sciences and particularly of the medical sciences have been set forth in the most sensational manner by writers in the public press. The many new and startling mechanical inventions have given people the impression that the practice of medicine has kept pace with the mechanical development in other fields of endeavor and that diagnoses are now made with mechanical, if not mathematical precision, thanks to the various blood tests. Many laymen believe that not only the presence or absence of disease but the name of the disease as well can be so determined. Such a state of affairs has set the stage for the appearance of the machine-made diagnoses of the Abrams followers. The value of the various "serums" and blood tests has been extolled to the point at which the uneducated or the unthinking layman is led to believe that a blood test is infallible. Add to this the fear of venereal disease implanted in his mind by the antivenereal propaganda, and we have a combination of circumstances with the greatest possibilities of harm. The time has come, I believe, when steps should be taken to give the layman and the general practitioner a word of caution.

Syphilophobia is increasing at an alarming rate in this country. More and more people are reading in magazines and newspapers of the consequences of syphilis, the ease of acquiring it, and its incurability. How readily a person may be seized with a fear of exposure to infection may be illustrated by a recent experience of mine. A carpenter in great perturbation called on me one day saying he feared he had become infected because he had just finished some carpenter work on the back porch of a man whom he had since learned was a patient of mine. On looking up the patient's record, I found that I had given him a few intraspinal treatments three years prior to the incident. Such unreasoning fear is by no means limited to workmen, but is to be found equally often and to the same degree among employers. I have had many dispensary patients under treatment for late syphilis who lost their jobs when it became known that they were receiving treatment. A great fear of cantagion resulted in no attempt being made to get the facts—the patient was forthwith discharged.

One of the most potent factors in the production of syphilophobia in the Middle West has been the full page advertisements appearing in the daily papers of Chicago. The advertisements are so worded that a person, if he continues to read the advertising long enough, may be convinced that he has syphilis, or may at least be led to have a test made. Such advertising, I know from experience, does induce many syphilitic persons to put themselves under treatment who otherwise would have neglected to do so, but it also causes a large number of people who have never been exposed to the disease to have Wassermann tests made. One intelligent man could give me no better reason for wanting a test than that he thought he was about 2 pounds underweight; another because he had been masturbating; another because his family physician, when consulted about a minor ailment, shook his head. When such a person seeks a blood test and is given a negative report, he is convinced that he is free from syphilis, such is his faith in the test, even though he may have an aneurysm, advanced tabes or beginning general paralysis. But if he is given a slightly positive report, as a rule, no one will ever be able fully to disabuse his mind of the idea that he has syphilis. The harm done in the first group of patients is probably no greater than in the second.

With this body of syphilophobes constantly increasing, we as serologists and clinicians have a heavy responsibility to assume. Much of my work as a syphilologist now consists in trying to convince patients that they haven't syphilis rather than in treating those who have the disease. Usually, when a person merely suspects that he has syphilis, a careful physical examination and a negative Wassermann report will convince him; but should he be so unfortunate as to have a slightly positive Wassermann report returned to him, even though it be only from one of a dozen different laboratories, he never can be fully convinced. He goes about tortured by doubts and seeks medical advice continually. One patient of mine, as a result of a slightly positive Wassermann reaction ten years ago, has wandered from coast to coast begging physicians to treat him. As many of the reputable men have refused to do so, he has been obliged to step down the scale in order to find men who would treat him. He carries about with him his own favorite type of

* Read before the Section on Pathology and Physiology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

spinal puncture needle, and when last seen had had twenty spinal punctures done by men in various parts of the country. The reports on his spinal fluid have been uniformly negative, but the one slightly positive blood Wassermann reaction ten years ago was sufficient to upset his whole life.

In no class of patients does the slightly positive Wassermann reaction cause so much harm as in the candidate for marriage. The very laudable movement for such examinations set on foot by various agencies, insisted on by some eminent divines of the Episcopal Church and enacted into law in some states, has undoubtedly produced good results; but when a slightly positive Wassermann reaction is returned a day or two before the ceremony is to take place, the situation may be nothing short of tragic. In the last year I have struggled with five such cases. All the cases were alike in that there was no history and no symptoms of syphilis. The Wassermann tests were made as a routine in my own examination in one case. In the other four cases the candidate had gone to a laboratory on his own initiative. In only one case was there sufficient time to check the reports properly before the ceremony, but in all cases the checkup was eventually carried out and the slightly positive reports were all disproved as completely as it is possible to disprove such reports.

The tragic effects of a slightly positive Wassermann reaction are well illustrated in the case of a young woman, recently graduated from college, and engaged to be married, who went to Hot Springs for a vacation. After arrival she was induced by her girl friends to take the baths, and in order to do so she submitted to a medical examination. The result of this was a slightly positive Wassermann report, on the strength of which she was induced to begin treatment. Dumfounded, she wired to her father to come, and to her fiancé, breaking her engagement. After the arrival of her father the Wassermann reaction was checked and found to be negative, but the harm had been done. Although the fiancé was unshaken in his faith, the father was inclined to accept the positive Wassermann report, and to suspect his daughter of wrong doing. I have had this young woman under observation for the last year, but I have never been able to find anything suggestive of syphilis either in history or by means of intensive physical and serologic examinations. Nevertheless the father continues to suspect his daughter, and merely tolerates her presence at home, where she remains unmarried and most unhappy.

Patients with simple dermatoses, such as pityriasis rosea, impetigo, psoriasis, lichen planus, tinea versicolor and even scabies, are frequently the victims of machine-made diagnoses. The practice is all too common among medical men, untrained in dermatology, to shift the responsibility of the diagnosis to the serologist. I recall vividly the case of a 16 year old girl of excellent family who developed pityriasis rosea and was sent by her family physician to a laboratory for a Wassermann test. This was slightly positive, and an appointment was made to give the patient arsphenamine. On the way to keep their appointment, the parents decided to get another opinion. As pityriasis rosea runs a self-limiting course of a few weeks, the disappearance of the lesions would have been attributed to the arsphenamine injection, and the child would have gone through life supposedly syphilitic had not the correct diagnosis been established before treatment was begun.

Another case having tragic possibilities occurred in a woman, aged 20, who developed a number of typical lesions of impetigo contagiosa during a very hot summer. Her fiancé, with whom she frequented the bathing beaches daily, had been first infected in the bearded region by his barber. The young woman consulted a physician after the lesions had been present for three days. He, in turn, sent her to a laboratory for a blood test. On the receipt of the report, which was slightly positive, the clinician without any hesitation told the patient she had syphilis, and made an appointment to give her arsphenamine. The girl, who was a recent arrival in the city, wired her family physician in her home town for advice, and was told to consult a dermatologist. The lesions completely disappeared in five days with the use of mercurial preparations.

Another woman, aged 30, had been troubled by the itching of a typical patch of lichen simplex chonica on the knee for six months. A slightly positive Wassermann report was followed by twelve intravenous injections of arsphenamine. As there was no change in the lesion after the injections, the patient sought advice elsewhere. There was nothing in the history suggestive of syphilis, nor was there any sign or symptom of that disease. The lesion yielded to radiotherapy, and to date the Wassermann reaction has been repeatedly negative.

Divorces may, and sometimes do, occur as a result of slightly positive Wassermann report. A young woman last year developed grouped lesions about the elbows and limbs. Her local physician, instead of making an effort to determine the nature of the dermatosis, resorted to the makeshift of a blood test. It was slightly positive, the husband was informed, and a divorce resulted. The patient received only four arsphenamine injections before arriving in Chicago. She has typical lesions of psoriasis on the elbows, knees and scalp. Since she has come under observation, the Wassermann reaction has been constantly negative, and she has developed no signs or symptoms of syphilis during the past year.

In the last few months I have seen two young women under 25, both of whom had eruptions typical of lichen planus. In each case a slightly positive Wassermann report had led to intensive arsphenamine treatment. Both patients had suffered severe emotional disturbances before the onset of the eruption, but still greater shock occurred when they were told that they had syphilis. In one case, after apparent therapeutic failure, the physician sought aid. In the other, the patient herself decided that there must be some mistake in the diagnosis.

As a disseminator of false diagnoses of syphilis, the slightly positive Wassermann report was without a rival until the advent of the Abrams machine. If any proof is needed of the childlike faith of the American public in machine-medicine, one has only to call attention to this notorious hoax, which happily is now falling into disfavor with the public. I have under observation a girl, aged 19, who sought advice of an Abrams operator because of brownish patches on her chest. She was run through the machine, which promptly gave the customary diagnosis of a "trace of syphilis." The operator, to corroborate the findings of the machine, showed the patient a statement in a medical book to the effect that syphilis causes "copper colored spots" on the skin. She was more than convinced, and began arsphenamine treatment, which was continued throughout one year. In doing so she exhausted her financial resources, became an outcast in her home, and was rarely spoken to by any member of her family. Her "copper colored spots" were nothing more serious than

tinea versicolor, which entirely disappeared in one week with Whitfield's ointment. The Abrams machine, however, overlooked a favus infection in her scalp, for which I am now treating her. Dermatologic terms, no doubt, are a severe tax on that instrument, and it is not surprising that it misses a disease or two now and again.

Syphilophobia, whether it be engendered by reading, by slightly positive Wassermann reports or by the indicator of an Abrams machine, is a serious state of mind, and its consequences may be more serious than those of the disease itself. I once had a syphilophobe under observation for about two years, during which time he became a great nuisance. He was sure that he had syphilis, and it was impossible to convince him to the contrary. Fortunately for him, he finally contracted a chancre and from that time on he was happy. Another man ruined his life worrying about syphilis only to die suddenly of cancer, a disease to which he had never given a thought.

The syphilophobe is indeed fortunate if he happens to be in the hands of a conscientious and well trained syphilologist who will not subject him to unnecessary treatment; but if he falls into the hands of a quack or a mercenary and unscrupulous physician, his health may be ruined and even his life destroyed. The patient having a real or imaginary venereal disease is so completely at the mercy of the clinician and the serologist that if either one or both be dishonest the patient may become the victim of their collusion and extortion, as the Wassermann report is an ideal instrument of quackery; the blood may be drawn in one room, for the psychologic effect on the patient, and thrown into the sink in the next. Meanwhile the most impressive kind of a positive report may be typed on imposing blanks with multicolored inks and elaborate signatures.

We are all familiar with the symptoms of intolerance to arsphenamine, such as icterus, neuritis, fatal purpura and dermatitis exfoliativa. The last is by far the most common, and in the past year I have seen three such cases, in no one of which, so far as could be determined, was there syphilis, nor had the well recognized sodium thiosulphate treatment been administrated. One patient in very modest circumstances had been completely incapacitated for two months. Because of the occasional but very serious consequences of both arsphenamine and mercurial therapy, we should never subject a patient to either one or both of these without careful weighing of the evidence. A therapeutic test-injection of arsphenamine is frequently justified and often of much more value than a Wassermann test, but the dose is small and rarely if ever does harm. Some physicians, apparently, have little or no hesitation in starting a patient off on intensive treatment on no better evidence of the presence of syphilis than that offered by a slightly positive Wassermann report.

As pathologists and clinicians, I feel sure, we are not contributing to the spread of syphilophobia and its consequences either by fear-engendering advertising or by the use of the Abrams machine, but we may be doing more than we suspect in the matter of slightly positive Wassermann reports. It is laudable on the part of the serologist to wish to make his Wassermann reactions so sensitive that no trace of reagin will be overlooked; but in doing so he takes chances in getting false weakly positives. This danger is recognized by the Minnesota State Laboratory, according to Irvine and Stern,[1] and only completely positive or completely negative reports are sent out unless the cooperation of the physician or the patient can be obtained for the purpose of getting further specimens for checking. State and municipal laboratories should be extremely careful in reporting slightly positive Wassermann reactions, because in some of our large cities women taken in vice raids are held pending the outcome of a Wassermann test. Such women are by no means all prostitutes. At times women who lead otherwise highly respectable lives are caught by chance with a man in a room of a first class hotel. It requires no imagination to realize how much injustice might result from a slightly positive Wassermann reaction in such a case. The liberty of a person should not be jeopardized by such a variable as a weakly positive Wassermann test.

As a clinician I am not qualified to discuss the technic of the Wassermann reaction. I do not minimize the value of the test, but I think it important to call the attention to some of the unfortunate clinical results of the slightly positive reports given out to the layman and to the medical man who still has unbounded faith in the infallibility of the test. We are all aware of the variations in the results with different antigens, in different stages of syphilis, in pregnancy and in early infancy; but have we discharged our duties to the public and to the general practitioner by doing our utmost to disseminate the facts about the limitations of the test? Kolmer and his co-workers have done a great service to medicine in standardizing the technic; but in the hands of some of the best of the commercial laboratories, even this modification has given trouble. Three of my most embarrassing cases were first tested by the Kolmer method. The difficulties were, no doubt, due to the operator; but having visited the operator while at work, I know that the Kolmer method is being used as stated on the reports. Granted that the Kolmer modification has contributed greatly to the standardization and to the reliability of the test, I am convinced that there still remains much to be desired from the standpoint of reliability, and that at present it is unwise to give reports to laymen who are not under the care of a physician.

There is a moral obligation, I am inclined to believe, on the part of the serologist to make it clearly understood by clinicians that the Wassermann report is not infallible; that at best it is frequently only a symptom, and that, in case of doubt, further specimens of blood should be submitted for examination. Medical students should have impressed on their mind the fact that physical examination is just as important as ever and that serology can never be a substitute for it.

25 East Washington Street.

1. Irvine, H. G., and Stern, D.: The Wassermann Test, Arch. Dermat. & Syph. 8:818 (Dec.) 1923.

ABSTRACT OF DISCUSSION

DR. UDO J. WILE, Ann Arbor, Mich.: I am delighted to have heard one who has courage enough to cast at least some doubt on the value of biologic test in the diagnosis of the disease. I think Dr. Mitchell was extremely temperate in his remarks. It might be proper to state that today the majority of syphilitic cases are not being treated for syphilis, but for a positive Wassermann reaction. I want to add my experience to his own and to state that it is far more difficult to cure patients, figuratively and literally, who have a positive Wassermann reaction and the fear and frequent psychosis that develop from it than it is to cause the disappearance of the actual syphilitic lesions and to produce in the patient the protective background. The whole question bears directly on the prognostic value of this test. I would yield to no one any high estimation which I hold of this test as a diagnostic measure. I believe the most unfortunate situation has crept into the actual practice of medicine in the treatment of

syphilis in interpreting or giving to this reaction a value, from a prognostic standpoint, parallel with its diagnostic significance. After all, we know nothing about the positive Wassermann reaction. We know very little about the difference between the weakly positive and the strongly positive Wassermann reaction. In the absence of all other causes, a positive Wassermann reaction means the patient has or has had syphilis. I do not subscribe to the view that the presence of a Wassermann reaction in an otherwise healthy person who has had a background of years of treatment is necessarily an indication that he requires further treatment. The uncertainty of the ground that we stand on can be illustrated no better than by the fact that all of us are using different methods of determining what a positive or negative Wassermann reaction is. In a laboratory attached to one clinic a faintly positive Wassermann may become a positive, two plus or three plus, depending on the degree of sensitivity of reaction used. It would appear to me to be as sane to prognosticate the cause of typhoid by the Widal test if we had fifteen or twenty ways or methods of testing. Until all of us can use exactly the same technic, and until all of us can be dealing with persons who will react exactly the same way under given circumstances to the same biologic test, we shall never be in a position to speak authoritatively about the strongly or weakly positive cases and estimate thereby the degree of disease process or the degree of positive or negative that is present.

Dr. H. J. Corper, Denver: Dr. Mitchell's paper is timely, and I only wish to digress one moment to sound a word of warning at this time to the profession at large regarding the hasty and unreserved acceptance of new laboratory tests for syphilis until they have been exhaustively tested by a large number of qualified men in different laboratories (clinical pathologists and specialists in venereal diseases). I am prompted to sound this warning by the fate of such tests as the complement fixation test for tuberculosis and the more recent tubercumet test for the same disease. After all, we have an exhaustively tested method in the Wassermann reaction whose value has been critically considered and whose shortcomings we are now becoming fully aware of, as both Dr. Wile and Dr. Mitchell have said. Before we can displace this test by another so-called simpler test, the latter should be proved of greater merit and capable of displacing the Wassermann reaction by the men in the special fields primarily concerned. Dr. Mitchell and Dr. Wile are also concerned in this work with us; as members of affiliated special fields it should be put before them for testing, as well as before competent clinical pathologists, before we give it to the general profession to be utilized as a thoroughly reliable and competent method.

Dr. Michael G. Wohl, Omaha: The serologist should be heard also. I believe Dr. Mitchell and Dr. Wile will agree that no serologic test is so important from an economic, social and diagnostic point of view as the Wassermann. The test, of course, is not infallible. The serologist, who is primarily a physician, and therefore bears in mind the patient, will regard the reaction, irrespective of the final reading, as a "symptom" only. Though no explanation has been offered for the reaction, enough tests have been made, which were checked clinically and by postmortems, to convince one that a four plus Wassermann, in the temperate zone, spells syphilis. The clinical side of the case is, after all, more important proof of the presence or absence of syphilis. The clinician will aid the serologist in checking his reactions. However, positive proof of the correctness of the latter lies in the postmortem. We all recall cases that clinically and serologically were declared free from syphilis, yet in which Dr. Warthin has demonstrated spirochetes in the tissues after death. The evaluation of a one plus reaction presents great difficulties. Men of Dr. Mitchell's and Dr. Wile's experience do not need the serologist's interpretation of a doubtful Wassermann reaction, but the average physician wants to know whether a suggestive case is or is not syphilis. In the face of a doubtful positive Wassermann reaction we tell the physician to examine the patient for any evidence of syphilis, recheck the test or the spinal fluid, if possible, but not to pronounce the case syphilis on a one plus reaction. I have met patients who developed syphilophobia on account of a one plus Wassermann. I feel sure, however, that a physician who practices clinical pathology is not going to diagnose syphilis on a one plus reaction. True, enough, there are laboratories that are willing, for the fee there is in it, to give opinions to patients who come to them. The American Medical Association, in cooperation with the American Society of Clinical Pathologists, is doing a splendid piece of work in weeding out questionable laboratories, run by lay technicians, who diagnose syphilis from the serologic results alone. Among the several reasons for a doubtful Wassermann reaction, by far the most important is the technic. By employing Kolmer technic we have been able to reduce the falsely positive reactions to a minimum. I fear that the pendulum may swing back: We are apt to overlook cases of syphilis in which treatment should be given; the men out in the field may gain a wrong impression and condemn Wassermann tests altogether.

Dr. Ralph E. Duncan, Kansas City, Mo.: Medical men have to be careful in their diagnosis. The Wassermann test happens to be very popular. The physician has put the laboratory man in the position he is in. He is unable to impress his patient with his ability to make a diagnosis with his own methods. He hands him the report and says, "That is what the laboratory says." The patient likes to see things. He will pay for a printed report, and he likes to see colors. He can understand that, but he cannot understand the mechanism of the intelligence of the average physician. Physicians, like all human beings, are becoming lazy, and they will not make a diagnosis if they can get their diagnosis in cut short form. That is what they are trying to do. It does not come down to the danger of a one plus Wassermann reaction in making people unhappy and unhealthy any more than any other diagnosis made by men who do not know their subject and cannot impress their patient with the facts in the case and make a correct diagnosis.

Dr. Frank Wright, Chicago: I have learned in the course of careful examination of patients to take blood in the morning on an empty stomach; that is, in the fasting stage. In my office we take blood as a part of a chemical examination and say nothing about the Wassermann test being made. We go ahead with our chemical examinations, and we make a Kahn test as well as the Wassermann test. It is of intense interest to check the Wassermann reports that we get back from our laboratories. One year ago my assistant, about to be married, had his blood tested and got a four plus positive report, which four days later came back as a negative. On a dear old nun we got a two plus positive report, and she was, of course, most unhappy until we could finally get the thing settled negatively. A lawyer, a very energetic man with considerable ability in his own line, became a perfect neurasthenic after a one plus positive report. One other case was that of a child with a one plus positive report, which was the source of a great deal of grief on the part of the parents. We have never been able to overcome the possibility of this. The father thinks that his father having had syphilis was the cause of the one report which they brought to me.

Dr. C. E. Roderick, Battle Creek, Mich.: I should like to speak of the importance of educating the clinician to the fact that he must reconcile the report of his laboratory. A sad thing happened in my clinic, because of a weakly positive test. The damage has been done largely by the physician handing out a report without any qualifying statement. I believe there is a way to handle that situation. I recommend in every case of a positive test that it be repeated before anything is said to the patient and repeated again, if necessary. If there is doubt, the blood should be sent to another laboratory. If the physician will be careful, he will not have trouble with the test.

Dr. J. J. Moore, Chicago: As a laboratory man who has performed a few thousand Wassermann tests, I would not accept a four plus Wassermann reaction from any laboratory by any technic as diagnostic of syphilis unless it was sup-

ported by clinical evidence, a clear-cut history, or was repeatedly positive. We all can make mistakes. While the Kolmer technic is better in the hands of the majority than any other technic for the Wassermann test, errors may occur in its use. The majority of Wassermann tests in this country are not performed by physicians but by technicians. In many places they are read by physicians and the report sent to us is signed by the physician, but very few physicians perform the entire test. This procedure may lead to some errors. I have a Wassermann report of one plus from a Chicago laboratory to a physician with the added statement that this means the patient has a little syphilis but not as much syphilis as a two plus or three plus. Fortunately, the American Medical Association is trying to clean up the laboratory situation, and I think that in a few years we shall have the menace of the weakly positive Wassermann reaction reduced.

DR. JAMES HERBERT MITCHELL, Chicago: I do not come here in the spirit of criticism of serologists. I come here to tell how much trouble the clinician may have with a slightly positive Wassermann report. Somebody has said, I think it was Broemer, that the present serologic and laboratory methods have resulted in the production of pseudosyphilologists. The public laboratory, such as that of the state or municipality, makes the diagnosis without charge. The physician gives a number of injections of arsphenamine, and the work is done. That is a very unfortunate state of affairs. Another paper might be written on the negative Wassermann report. This would be even a longer story, as we constantly see both early and late syphilitic lesions remain unrecognized, because the Wassermann reaction is negative. We all know that the Wassermann reaction in the primary stage of syphilis becomes positive rather late, and in this there is a marked variation. It has been worked out by the French that it becomes positive about thirty-eight days after exposure—not after the development of the primary lesion but after exposure, so that in the first stage we must use the dark field. We must know that the Wassermann is of no value. Late in the disease, frequently, we do not need the Wassermann test. A late syphilitic skin lesion is highly characteristic, and as a rule the test is not necessary at all. Moreover, it is usually negative. Not only do we have mistakes in serologic technic to contend with, but we have clerical errors in transcribing the results of the test as well. One of the most interesting, and one of the most serious mistakes that I have known of that character occurred to a colleague of mine recently. He is on the staff of a large hospital, and the pathologist of that hospital made the examination. The pathologist had written "Spirochetes not found," but the stenographer typed "Spirochetes are found." He was probably a poor writer, and the three letters looked as much like the one word as the other.

Moral Behavior.—Psychology, like anatomy with its divisions of spinal cord, midbrain, cortex, and so forth, has its different divisions which should have their separate terms. For example, at the bottom of the scale, one might put reflex actions, then social, intellectual, asseverative, reflective, rational and so on. In a general way, we observe that mental disease consists in a degeneration of these various forms of conduct. I use the term moral behavior to describe the highly complex actions of civilized adults, the sum of all these elementary factors. In problems of this description, we have to remember that men are not all capable of achieving the same degree of complication in mental behavior—just as different persons require different amounts of sleep, nourishment and so on. I have myself found it profitable (in the clinic and outside it) to consider the problems of the individual from two points of view. There is always a question as to the degree of psychological tension an individual can achieve. There is also a psychological quantity factor which conditions his capacity for social adjustment and mental development. Such studies have a practical as well as a theoretical value; they should lead to more precise methods of psychological treatment, which I hope will not be long in forthcoming. In conclusion, let me say that I hope that the field of the study of mental abnormalities will be reclaimed by neurology and psychology.—Pierre Janet, *Am. J. M. Sc.*, June, 1926.

THE INTRACUTANEOUS SALT SOLUTION WHEAL TEST

ITS VALUE IN DISTURBANCES OF THE CIRCULATION IN THE EXTREMITIES *

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Vasomotor and other circulatory disturbances of the extremities have been the subject of a great deal of study and investigation at the Mount Sinai Hospital, Cleveland, on account of both the relatively large numbers of cases coming under observation and the paucity of our medical knowledge concerning them. Up to a few years ago, one of the greatest obstacles to a more extended study was the lack of an accurate and convenient method of measuring the blood supply.

A given case may have presented the picture of cold, painful and cyanotic extremities, with the limb changing rapidly from purple to waxy white and back again, on elevation of the limb and then lowering it below the level of the body; and if the pulse in the dorsalis pedis artery was absent, it was held that the patient had a serious obstruction to circulation. If the same conditions were present, except that the pulse in the dorsalis pedis artery was much lessened, then a less serious disturbance of the circulation was expected. If in still another case the same symptoms were present but the pulse in the dorsalis pedis artery was fairly good, although one might have a personal opinion that such circulation might be seriously impaired, it would have been difficult to convince the unbiased observer of the truth of this contention.

The determination of the relative viscosity of the blood [1] enabled us to crystallize out the so-called Buerger's disease types, but it shed no light on the sufficiency of the circulation.

The special types of calorimeter apparatus, devised by Stewart and others, are without doubt the most accurate measures for the actual volume of circulating blood, but they are so delicate in their handling that Stewart advised us that they were quite unsuited for routine hospital or office experiment.

The oscillometer of Pachon was found to be a convenient and reliable guide for the comparative measurement of the arterial circulation; but because of the size of the cuffs and the impossibility of determining the circulation in the foot or around the ankle, its use was soon relegated to that of a check on the accuracy of the intracutaneous saline test.

The ingenious hypodermic pyrometer method of Brooks was not used, on account of technical difficulties and our faith in the saline test, which was under trial just at the time Brooks reported his experiments.

The intra-arterial injections of radiopaque substances was also not tried out because we do not believe that such heroic measures are justified in extremities with diseased vessels.

In May, 1925, one of us [2] reported that the intracutaneous salt solution test, as devised by McClure and

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† Read before the Section on Orthopedic Surgery at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Stern, W. G.: J. Bone & Joint Surg. **6**: 902 (Oct.) 1924.
2. Cohen, M. B.: Intracutaneous Salt Solution Test, J. A. M. A. **84**: 1561 (May 23) 1924.

Aldrich in the study of edemas, afforded a simple method of determining the efficiency of the arterial circulation in the extremities. In that report no effort was made to arrive at a satisfactory explanation of the mechanism involved, although a number of experiments were described which showed that, in all areas in which the arterial circulation was diminished below that amount which we are pleased to call normal, there was an increase in the rapidity of the absorption of intracutaneously injected salt solution. Since that time, we have performed this test as a routine on all patients with symptoms suggesting circulatory disturbances in the extremities, with such uniformly good and accurate results that this report of our experiences, which now includes ninety-seven cases, is deemed advisable. In the presence of edema, which also reduces the absorption time, the test is not to be wholly relied on as a measure of arterial disturbance, but must be checked up by the oscillometer.

METHOD OF PERFORMING TEST

The test is performed as follows: By means of a tuberculin syringe and a very fine needle, 0.2 cc. of 0.85 per cent salt solution is injected intracutaneously. The eye of the needle should be visible through the outer layer of the skin when the injection is made. The first injection is made at the base of the great toe, and similar ones are made at 4 inch intervals up the leg and thigh. The sense of touch is used to determine the disappearance time, as the vasomotor changes produced by the injection often render visual judgment unsatisfactory. Normally, sixty minutes or more is required for the complete disappearance of the wheal produced by the injected fluid, though readings as low as thirty minutes at the base of the great toe have been considered normal (as we have one such reading in a patient without clinical evidence of vascular disease); but as a general rule sixty minutes or more may be considered as the normal disappearance time.

REPORT OF CASES

A few typical cases, illustrating the accuracy and the clinical value of the intracutaneous saline test, may be advantageously cited.

CASE 1.—A man, aged 62, had his thigh crushed between the bumpers of two street cars. He was in profound shock, but there was in addition the blood picture of severe hemorrhage. The thigh was enormously swollen, and there was a puncture wound just behind Hunter's canal. The limb was cold and anesthetic, and no pulse could be palpated in the foot. The question arose, Was the femoral artery severed and was the patient in danger on account of hemorrhage rather than shock? Should we operate or not?

The intracutaneous saline test showed the wheals on the foot and leg to remain more than sixty minutes, and a verdict of shock—competent arteries—was delivered.

Necropsy showed the femoral, profundal and popliteal arteries and veins intact, but the muscles and tissues of the thigh were crushed to pulp. No clot typical of severe arterial hemorrhage was found, although there was a large amount of blood extruded into the crushed tissues.

CASE 2.—A man, aged 38, stated that he had frozen his left foot while driving an open automobile in zero weather and was taken to a hospital, where the great toe was amputated at the metatarsophalangeal joint, about three months before he first came under our observation. There was an unhealthy looking ulcer over the head of the metatarsal bone. The pulse in the dorsalis pedis artery was missing. The foot was cyanotic and cold. A diagnosis of arterial thrombosis due to frost-bite was made, and under appropriate treatment the ulcer was soon healed.

Two years later (December, 1925), he again "froze his foot" under similar conditions, and his little toe was amputated as an emergency measure. This stump also did not heal.

Three months later, the outer border of the foot, representing the area of skin surrounding the metatarsal of the little toe, became black and gangrenous, and intense pain and suffering followed. Under the same diagnosis—local arterial thrombosis from frost-bite—an amputation just below the calf of the leg was proposed and was to have been carried out. We were unexpectedly called for the second time at this point. No oscillometer was handy. With saline solution and a hypodermic syringe, we performed the intracutaneous saline test on both limbs.

TABLE 1.—*Disappearance Time (Minutes) of Wheals on Left (Gangrenous) Leg*

1. Just above area of gangrene	5
2. Ankle	15
3. Lower calf	18
4. Calf	16
5. Upper calf	20
6. Knee	30
7. Thigh	30
8. Upper thigh	60+

The right leg showed only a moderate circulatory deficiency, but the left (gangrenous) leg showed a disappearance time of the solution, as shown in table 1.

A diagnosis of angiotrophosis with thrombosis of the left popliteal artery was made and a thigh amputation advised. A midthigh amputation was performed. The flaps and muscles hardly bled at all. An organized clot was found in the popliteal artery, and one or two of the calf muscles were found already gangrenous. There was only local arterial thrombosis in the foot; from the ankle to the popliteal space the arteries were patent. Later examination showed a blood viscosity of 6.10 (Hess).

The real explanation of this case is that the man (an inveterate smoker) was suffering from angiotrophosis (thromboangiitis form) and that the untoward exposure to cold brought on a rapid deterioration of the circulation.

CASE 3.—A man, aged 51, stated that two years ago he lifted a weight of about 100 pounds, helping with the knee of the right leg, and while pushing upward felt something give way in the left foot, on which he was standing. He was soon unable to put any weight on the foot, which later became discolored and swollen and was treated by a competent physician for a strain of the plantar fascia. From that day on he could not work, on account of severe pain in the left foot and ankle; the condition was much worse in winter; the feet at times turned blue. Roentgen-ray examination of both feet was absolutely negative; the man was a distinct hypopituitary type, with bilateral knock knees and flatfoot. He weighed 206 pounds (93.4 Kg.) and was 5 feet 8 inches (173 cm.) tall.

TABLE 2.—*Absorption Time (Minutes) in Case 3*

	Right	Left
1. Base of great toe	14	13
2. Middorsum of foot	16	15
3. Ankle	16	14
4. Lower leg	26	32
5. Calf	36	37
6. Upper leg	60+	60+
7. Thigh	60+	60+

Physical examination was entirely negative for signs and symptoms produced by injury. The feet were cold, rather livid, and blanched easily when the legs were elevated to an angle of 45 degrees, and the pulses of both dorsalis pedis arteries were barely palpable. The systolic blood pressure was 100; diastolic, 89, and the blood viscosity, 6.7 (Hess). The oscillometer showed a marked diminution in the swing over both ankles and calves; it also showed that the circulation in the right leg was just as insufficient as that in the left. The intracutaneous saline test showed the disappearance time diminished in both legs, as given in table 2.

In this case, through the combination of the viscosity and the intracutaneous tests, we were positively able to diagnose a case of thrombo-angiitis, which had been masquerading for

several years under the diagnosis of a purely traumatic condition.

CASE 4.—A boy, aged 8, received a supracondylar fracture of the left humerus, resulting in a typical Volkmann's ischemic paralysis of the arm and hand. There were many large scars of old ulcers on the skin of the forearm. A pulse was present in the radial artery. After three months' treatment with wedged casts, the fingers and wrist were straightened, even slightly hyperextended. Only a few pressure sores had developed, and they all healed readily. Two weeks before we last saw him, a padded cockup splint had been applied and physical therapy begun. Three days before we saw him, at 9 a. m., the mother massaged the elbow and shoulder and adjusted the splint. One and a half hours later, she noticed ashen gray blisters at the tips of each of the fingers and the thumb. The next day the fingers were all cold, numb and pale. The blisters were larger. The radial pulse was small, yet palpable.

The intracutaneous saline test showed a marked decrease in the absorption time in the entire hand down to the wrist, while from wrist to elbow the rate, though still shorter than normal, showed a much better circulation.

The diagnosis was thrombosis of the palmar arch.

CASE 5.—A man, aged 44, received a spiral fracture of the tibia by being run over by the wheel of an automobile. He had been under treatment for twenty-four hours in a pillow splint with electric light heat baths for threatened gangrene. On the day the first tests were made, although the danger of

TABLE 3.—*Saline Absorption Time (Minutes) in Case 6*

	Right	Left
1. Toe	5	17
2. Foot	19	28
3. Ankle	17	72
4. Shin	37	75
5. Upper shin	41	80
6. Calf	58	78
7. Upper calf	70	76
8. Lower thigh	80	79

TABLE 4.—*Saline Absorption Time (Minutes) in Case 6 Eighteen Days After Admission to Hospital*

	Right	Left
1	5	4
2	4	5
3	19	19
4	23	43
5	58	68
6	70	70
7	75	75
8	78	72

gangrene seemed remote because of the prompt capillary return after pressure on the toe nails, the pulses of the foot were not palpable, and the skin of the calf, foot and toes was a mottled splotch of gray, blue and purple. Above the knee, the wheals of the saline test remained more than seventy-five minutes; below the knee the absorption time was reduced in spots to less than three minutes. This, however, was due to local edema of the tissues.

A bad prognosis was given because of the marked reduction of the absorption time, but slowly the efficiency of the circulation was restored until, on the eighteenth day after the injury, all danger from the side of the circulation was passed. The absorption time had then increased to forty-five and sixty minutes, although the edema had not changed.

CASE 6.—A man, aged 82, fractured his right hip eight years previously. Of late he had had great pain in the calf of the right leg and foot. He had a marked sclerosis and calcification of all palpable arteries. The saline absorption time when he entered the hospital is given in table 3.

The right foot became rapidly worse; one toe became slightly discolored, and eighteen days later a saline test was made, the results of which are given in table 4.

The third toe of the right foot became gangrenous and finally dropped off; afterward, the entire foot was involved. On account of the similarity of the results of the test, a similar process was predicted in the left foot, and before death one of the toes of this foot showed a beginning gangrene.

CASE 7.—A man, aged 69, had been ill with the symptoms of "stomach trouble" for many years; but one year previously developed angina pectoris, high blood pressure, and arteriosclerosis with intolerable pains in the calf of the right leg and foot. He could not walk more than a few hundred feet at a time; there was marked intermittent claudication. The pain was so severe as to keep him awake at night.

There was extreme blanching of the legs on 20 degrees elevation. No pulses were palpable in the feet or in the politeal space. The blood viscosity was 3.75. The oscillometer showed a decrease of swing to about one half over the entire

TABLE 5.—*Absorption Time (Minutes) in Case 7*

	On Admission	Three Weeks Later	Finally
1	35	11	9
2	48	17	10
3	62	33	30
4	70	43	42
5	75	74	60+
6	78	85	80+
7	78	86	80+

right leg up to the hip. On the first examination, the dorsalis pedis pulse was palpable: two weeks later it could not be made out. Heat, rest and the Koga treatment failed to relieve the patient. The intracutaneous saline test gave the results in table 5.

The patient grew rapidly worse and gangrene was predicted, but he refused amputation for many months. Seven months later when gangrene was imminent he consented, but did not survive the operation. The pathologic report was: fibrosis and calcification of arteries; firm organized clot in popliteal artery at its bifurcation.

CASE 8.—A man, aged 45, worked steadily until three months ago, when he dropped a heavy weight on the right great toe and fractured the first phalanx. This was treated by rest and splints. Since the accident, this foot had been cold and weak, and he could hardly walk on account of pain and weakness. The intracutaneous saline tests taken in the course of the differential diagnosis showed a disappearance time of over seventy-five minutes in all parts of the thighs, leg, calf, ankle, foot and toes, and a circulatory disturbance was ruled out. The cause for his condition proved to be a beginning lateral sclerosis.

CASE 9.—A man, aged 50, had bilateral thrombo-angiitis, with a threatened gangrene of the right foot. No pulse could be palpated in the dorsalis pedis artery of this side. The blood viscosity was 5.75 (Hess); the right foot blanched at an elevation of 20 degrees. The oscillometer showed no swing of the needle in the right ankle and calf, with about one half

TABLE 6.—*Absorption Time (Minutes) in Case 8*

	Right	Left
1	5	15
2	10	60
3	9	60
4	24	60
5	25	60
6	60	60
7	60	60
8	60	60

of the normal swing on the left side. The absorption time in the intracutaneous saline test is shown in table 6.

One toe of the right foot was afterward lost through gangrene.

CASE 10.—In a man, aged 27, with bilateral thrombo-angiitis, the right foot was much worse than the left. One toe of the right foot was ashy gray, but not gangrenous. The patient had had typical attacks of intermittent claudication, and the foot blanched on an elevation of 45 degrees. The intracutaneous saline test showed the circulation of the left side to be much more deficient than the right, as will be seen from table 7. In order to check up the correctness of this test, the oscillometer was used by an intern who had no knowledge of these findings; he found a marked loss in the swing of the needle on the left side and a much better reading

on the right, thus checking up this unexpected finding to a nicety.

CASE 11.—In a woman, aged 38, who had had severe bilateral varicose veins since childbirth, both feet and calves became blue, cold and painful after standing and walking. She had moderately severe bilateral flatfoot. The oscillometer readings on both calves and thighs were normal. The pulses of the feet were palpable.

TABLE 7.—*Absorption Time (Minutes) in Case 10*

	Right	Left
1	22	10
2	45	25
3	48	29
4	24	31
5	26	36
6	29	36
7	36	38
8	41	37
9	48	42

Clinically, it was a clear case of varicose veins. After the patient stood or sat with the feet dependent for a long time, the absorption time of the intracutaneous saline injections was reduced to from fifteen to thirty minutes. After a few hours' rest in bed or even a short elevation of the leg, the absorption time was increased to more than sixty minutes in all areas.

SUMMARY

1. In the absence of edema, the intracutaneous salt solution test is a simple, rapid and accurate method of determining circulatory deficiencies in the extremities.

2. Sixty minutes or more is the normal disappearance time of the salt solution.

3. In all instances in which clinical circulatory deficiency exists, the disappearance time is diminished; in the area just above the seat of a gangrene (existing or threatened), it is frequently as low as five minutes.

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ABSTRACT OF DISCUSSION

DR. BARNEY BROOKS, Nashville, Tenn.: The authors described a method of estimating the volume flow based on the ability of the tissues to absorb fluids injected into them. I am sorry they did not discuss the results of the application of this test in cases in which the volume flow of blood was not so obviously greatly diminished. I wonder whether this test would prove of value in the earlier stages of deficient circulation. I am inclined to think it would only indicate greatly diminished volume flow of blood.

DR. FRED J. GAENSLEN, Milwaukee: Dr. Stern mentioned that in cases of edema of the extremities the wheal produced by the injection of the salt solution disappears much more rapidly than it does when the injection is made into normal tissue. Could this be, in part, because of the more ready means of communication between the cells and the intercellular spaces in the edematous tissue? I wish that Dr. Stern would say something about the physical factors involved. Also what the probable result would be if the injection was made into a normal limb with the circulation temporarily cut off by an Esmarch bandage.

DR. WALTER G. STERN, Cleveland: I do not differ from Dr. Brooks at all. I believe his hypodermic pyrometer is a very ingenious method, but not so simple and convenient as the intracutaneous salt test. When one happens to be 12 miles away from a hypodermic pyrometer, as I was in one case, it is advantageous to have some easily and quickly appliable method, such as this intracutaneous wheal method really is; and it is here offered for what it is worth. Dr. Brooks is quite right that the general practitioner is usually aghast when he gets a case of disturbance of circulation; he is more aghast if he has to buy an oscillometer, and he would be still more aghast if he would have to have made for him or devise for himself a delicate pyrometer. While these other methods are very accurate and very good, the hypodermic intracutaneous salt solution wheal in the skin is convenient, rapid and, I believe, just about as accurate as the rest of them. Regarding the physiology of wheal formation, I am unable to give an accurate answer. I attended a meeting of physiologists and biochemists a few weeks ago when this subject was under discussion, and noted that they absolutely differed from one another in their explanations. I do not believe they know yet, but one thing is positive: it is not mechanical. It is not merely the injection of three drops of solution between the layers of the skin. If it were, then it should swell only to this amount; but we know that by putting in a little epinephrine and procaine hydrochloride, we get quite a different wheal than by injecting a very small amount of cocaine or a very small amount of salt solution, so that it should be a physiologic reaction of the skin to the substance injected, both as to quantity and as to quality. We have cited two cases in which we believe we were able to diagnose a circulatory disturbance in the extremity much earlier with the method that I have here described than we had ever done before.

A RED TORULA AS THE CAUSE OF A TONGUE ABNORMALITY

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Various types of yeastlike organisms are often encountered in swab preparations from the mouth and nasopharynx. These are usually few in number compared to the bacterial flora and are given little notice in general laboratory routine examinations. As a rule they are considered entirely saprophytic, or of a transitory nature, unless they appear in extremely large numbers. Those engaged in dental work occasionally record brownish black patches which are composed of yeastlike bodies on the tongue. Some of these respond readily, some slowly, to treatment; but very little further investigation has been attempted to determine to what extent these may be considered pathogenic. That these yeastlike structures may become sufficiently invasive to cause the production of antibodies has been demonstrated in the following case, which recently came under observation:

REPORT OF CASE

History.—J. H. W., a man aged about 30, was referred to the laboratory by a local physician with the request that an attempt be made to diagnose or identify a peculiar "crop of red grass" on the back of his tongue. On examination, a small reddish patch about 2 cm. in diameter, consisting of hairlike filaments, was noted. This lesion had caused the patient discomfort only as the filaments grew long enough to irritate the uvula. They were easily and painlessly removed, a common spoon being used to scrape them off. This process of removal had to be repeated, since after a lapse of about two weeks they would again be long enough to cause discomfort. The patient had first noticed this growth about three months previous to the time that he presented himself at the laboratory.

Laboratory Examination.—A part of the growth was easily removed with a sterile swab, some soft red material and a few tissue fibers adhering to it. Part of this was immediately streaked on plates of glucose agar, while a few of the fibers were placed in sterile saline solution. Two glucose agar plates were incubated at room temperature, two at 28 C., and two at 37 C. Growth appeared on all; those held at room temperature developed rather slowly, but the most typical and satisfactory colonies were seen on those kept at 28 C. In two days typical delicately pinkish yeastlike colonies appeared, together with a few colonies of bacteria. Cultures picked and placed on glucose agar slants, when incubated from three to four days, developed a heavy rose colored growth of pure yeast. In no cultures, so far tested, have spores been demonstrated.

The fibers placed in sterile saline solution were washed several times and then planted in various mediums, including hanging agar block preparations. It was noted that when these had been washed to such a degree that all the yeast cells had been removed, no growth appeared in any type of medium. If a few adherent yeast cells remained, these would proliferate, but the fiber remained unchanged.

Physiologic Reactions.—The red budding, nonsporulating yeast or torula grew well on glucose agar and scantily on plain extract agar, at an optimum temperature of 28 C. Thinking that it perhaps might be an oidium or some allied filamentous type, we used various mediums, such as glycerin agar, fresh liver agar and Sabouraud's, in hanging block and slant preparations. At no time and in no medium were mycelia produced. Fermentative tests were made in 1 per cent solutions (in broth) of the following sugars: glucose, lactose, saccharose, mannite, maltose, dextrose, xylose, raffinose, arabinose, dulcite, galactose, sorbitol, levulose and inulin. Good growth was obtained, but no acid or gas was produced. Gelatin was not liquefied and the growth was strictly aerobic.

Serologic Reactions.—In order to determine, if possible, the relationship of the yeast to the pharyngeal lesions, and its property to stimulate antibody production in the patient, the serum was used in agglutination and alexin fixation tests, suspensions of pure cultures being employed as antigens.

Agglutination Tests: Varying dilutions beginning with 1:5 of the serum were set up in 0.5 cc. amounts. To each tube was added 0.5 cc. of a saline emulsion of the yeast cells, the antigen being so diluted that this amount was in opalescence comparable to that of a standard typhoid suspension. The growth from a glucose agar slant, emulsified in sterile saline solution, stayed in suspension and was free from spontaneous precipitation. Two sets were made up in this manner, one incubated in a 37 C. water bath, and the other at 28 C., each for two hours. In a series kept at 37 C. the torula cells were completely agglutinated in the dilution of 1:600 and partially at 1:800. Alexin fixation tests, both whole cultures and extracts being used as antigens, were negative in all dilutions.

Animal Pathogenicity.—The pathogenicity was tested on a series of guinea-pigs, which were inoculated by skin scarification and by injections intraperitoneally and subcutaneously into the region of the inguinal lymph nodes. These animals were weighed and examined daily. At the end of two months they had maintained or gained in weight and were examined at necropsy. The subcutaneous tissues and peritoneal cavities were normal in appearance. Cultures of the peritoneal fluid and of various organs yielded no growth. From these observations it was concluded that, at least for the guinea-pig, this torula is nonpathogenic.

Treatment.—The patient was at this time beginning a series of arsphenamine injections for chronic malaria. Quinine was simultaneously administered. Whether either of these had anything to do with the disappearance of the growth is hard to say, but four weeks after the first examination it began to diminish in size and after about a month it was no longer visible. Agglutination tests made two months after the disappearance of the patch were negative.

COMMENT

Much has been written concerning these semipathogenic yeasts that seem to attack man occasionally. Many of these are classified by Castellani [1] as *Cryptococci*. They have been described as the causative agents for lesions arising in the body both externally and internally. Red, white and black yeasts seem to have the same ability to cause occasionally a pathologic process, but there seem to be no observations on cases of tongue infections by a red torula-like form. In a recent article by Prinz,[2] the causative factor of a very similar condition is said to be a black "yeastlike mold." He describes the same grasslike appearance of the patch on the tongue and the ease with which it can be removed. These blades, he states, are hypertrophied filiform papillae. This may readily account for the fact that fibers freed from yeast cells did not grow. In fact, microscopically, they appeared to have very little definite structure, although occasional nucleus-like bodies were definitely seen. Prinz speaks of this "black tongue" as a not uncommon condition noted by dentists and one which is sometimes easy to overcome and sometimes persists.

Grover [3] describes a series of yeast cultures isolated from throat swabs. Some of these he considers the causative agent of membranous and tonsillar inflammation. In animal inoculation, many of these strains which he isolated caused glandular enlargement; one of these, when rubbed on the scarified mucous membrane surface of a guinea-pig's cheek, caused the production of a false membrane which, just as the hypertrophied filiform papillae noted in the tongue infections, stripped easily and without hemorrhage. Of the strains isolated from throat cultures, he obtained one that produced a red pigment but differed in type of growth and sugar reactions from the strain discussed in this paper. Grover believes, as do Breed [4] and Bertarelli and Calamida,[5] that these yeasts are the causative factor in many throat and tonsil infections, particularly membranous angina. The yeasts ordinarily isolated from such infections are usually of the albus type, turning yellow in old cultures.

Whether such organisms, when they give rise to very evident inflammatory conditions, can be considered more than semipathogenic or not is left unanswered. However, if it is found, as in the particular case herein described, that yeastlike organisms may produce tissue irritation and hypertrophy and cause the production of definite agglutinins which disappear after the lesion has cleared, one may conclude that the rôle played by torula and like organisms in circumscribed lesions is not as negligible as has been previously believed.

1. Castellani and Chalmers: Manual of Tropical Medicine, London, Baillière, Tindall and Cox, 1919.
2. Prinz, H.: Black Tongue, Pacific Dental Gaz., pp. 109-119.
3. Grover, A. L.: Yeasts, Probably Pathogenic, in Throat Cultures, J. Infect. Dis. **19**: 89-96 (July) 1916.
4. Breed, Lorena M.: Some Clinical and Experimental Observations with a Saccharomycete, Arch. Int. Med. **10**: 108-121 (Aug.) 1912.
5. Bertarelli, E., and Calamida, U.: Ueber die ätiologische Bedeutung der Blastomyceten in den Tonsillen, Centralbl. f. Bakt. **30**: 60-65, 1901.

Abdominal Lymphoblastoma.—Lesions of the various types of lymphoblastoma are well known to develop within the abdomen as a late manifestation of disease. They are apt to be thought of as first appearing in the neck. It has been commented on but little that the abdomen is often the seat of the initial lesion or that the resulting symptoms frequently are prominent early. Hodgkin, in 1832, and Wilks, in 1865, in their classic papers on enlargement of lymph nodes, noted the involvement of lymphoid tissue within the abdomen, and were careful to observe the effects of pressure on surrounding structures at autopsy. Symmers, in his paper on Hodgkin's disease, which is considered by some a form of lymphoblastoma, has indicated clearly that preponderating enlargement of the cervical nodes is not the rule and that involvement of tissue within the abdomen is common and often the place where the disease originally starts. Lesions of lymphatic leukemia, its aleukemic form or pseudoleukemia and lymphosarcoma, which are the other chief forms of lymphoblastoma, are also commonly found in the abdomen. The latter two types involve the gastro-intestinal tract much more often than does Hodgkin's disease, but all frequently create masses within the abdomen.—Minot, G. R.: *Am. J. M. Sc.*, August, 1926.

PEPTIC DIGESTION OF COW'S MILK

THE EFFECT OF VARIOUS MODIFICATIONS USED IN INFANT FEEDING *

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The less efficient utilization of cow's milk as compared with breast milk in infant feeding is usually assumed to be due to differences in ease of digestion. The slower and less complete digestion of cow's milk has been ascribed to its high buffer effect in neutralizing the acidity of gastric juice and to the hard, tough curds formed in the stomach. Most of the adaptations of cow's milk to infant feeding have had as their object the correction either of the curd or of the p_H. The earlier modifications, such as alkalizing, boiling and predigesting milk or adding starchy diluents, had as their primary purpose the prevention of a hard, leathery curd. More recently, emphasis has been placed on the relation of the p_H to peptic digestion, and a number of acidified milks have been introduced. The proponents of these acid milks—hydrochloric acid, lactic acid (both cultured and artificially soured), lemon juice, and acetic acid or vinegar milks—have claimed that the lower p_H favors peptic activity and gastric motility, increases the antiseptic properties of the gastric juice, and stimulates pancreatic secretion.

The present work is an attempt to compare various milk modifications commonly used in infant feeding with reference to the rate of gastric digestion and to determine the relative importance in the digestion process of the character of the curd and the p_H. Peptic digestion was carried out in vitro on the various milk modifications and a quantitative determination made of the increase in the soluble nitrogen as a result of digestion. We realize fully the difficulty of reproducing in vitro the conditions that obtain in the stomach, where there is continuous secretion of acid and enzyme, and where the motility varies with the stage of digestion. It was hoped, however, that such experiments might indicate whether changes in the p_H or in the character of the curd or in the addition of certain anions produces a real change in the rate of digestion.

Later the modified milks were fed to young puppies. At the end of one-half, two and three hours vomiting was induced by apomorphine and the curds examined.

EXPERIMENTAL

We compared the curds and the rate of digestion of raw certified milk, milk pasteurized at 63 C. for thirty minutes, and milk boiled five minutes. For the acid milks we added to raw certified milk hydrochloric acid, U. S. P. lactic acid, lactic acid cultures, phosphoric acid and lemon juice, tomato and orange juice.

The alkalis commonly used—sodium bicarbonate, sodium citrate and lime water—were also added to raw certified milk.

Effect of These Modifications on the Curd.—Preliminary tests were made to determine the effect on the curd of cow's milk when the various acids were added. The acids used were hydrochloric, U. S. P. lactic, phosphoric, lemon juice and orange juice. Alkalis were not employed in these experiments, as they prevent curd formation.

In the case of the phosphoric, hydrochloric and lactic acids, addition of normal acids was made in the proportions of 3.3 and 0.033 cc. of normal acids to 100 cc. of milk. The lower acid concentrations were used primarily to give an optimum p_H for rennin coagulation. The higher concentrations were comparable to those prescribed in infant feeding. Fruit juices were introduced in the quantities suggested by Hess:[1] 2.1 cc. of lemon juice to 100 cc. of milk; 5.6 cc. of orange juice to 100 cc. of milk; 5.6 cc. of orange juice and 2.1 cc. of normal hydrochloric acid to 100 cc. of milk. Rennin was added in the ratio of 1 part of rennin to 30,000 of milk.

Immediately after the acids and rennin had been added, the milk mixtures were poured into centrifuge tubes and placed in a water bath at 37 C. for thirty minutes. At the end of that time the tubes were centrifugalized ten minutes, and the curds removed for examination.

In general the results were as follows:

In the case of the lower concentrations the curds were bulky and jelly-like, but even in these small amounts phosphoric and hydrochloric acids tended to form firmer curds.

Proportions Used

FLASKS	FLASKS
20 cc. of milk	20 cc. of milk
0.4 cc. of 0.2 per cent rennin solution	0.4 cc. of 0.2 per cent rennin solution
0.7 cc. of normal hydrochloric acid	0.7 cc. of normal hydrochloric acid
0.6 cc. of 0.4 per cent pepsin solution	0.6 cc. of water
Water, acid or alkali to make 23 cc.	Water, acid or alkali to make 23 cc.

The orange juice used in the large amounts (5.6 cc. per hundred cubic centimeters of milk) caused the formation of curds very similar to those formed by addition of the dilute acids.

The stronger concentrations of acids all gave curds sufficiently firm to retain their shapes when removed from the tube, but which differed considerably in texture. Phosphoric acid produced a tough, doughy curd, hydrochloric acid a somewhat softer curd, and lactic acid a slightly softer curd than hydrochloric acid. Lemon juice, which is approximately 1.25 normal acid, gave a curd small in bulk, which was at the same time soft and very easily broken. Orange juice combined with hydrochloric acid tended to make the curd somewhat softer and more cheeselike than hydrochloric acid alone.

Digestion Experiments.—In the digestion experiments the plan was to introduce with the milk and milk modifications a concentration of rennin, hydrochloric acid and pepsin comparable to what obtains at the height of digestion in the infant's stomach. We used as a criterion for acidity the statement of Marriott[2] that in the first two hours of digestion an average of 30 cc. of tenth normal hydrochloric acid is secreted for every hundred cubic centimeters of milk. In the stomach this acid is secreted gradually. We assumed that introducing all of the acid into the mixture at once would immediately create the most favorable conditions for peptic activity and that for a given amount of pepsin more digestion would occur in vitro

* From the Departments of Pediatrics and of Pharmacology and Therapeutics, University of Illinois College of Medicine.

1. Hess, A. F., and Matzner, M. J.: The Value of Milk Acidified with Lemon Juice, J. A. M. A. 82: 1604 (May 17) 1924.
2. Marriott, W. M., and Davidson, L. T.: Acidity of Gastric Contents of Infants, Am. J. Dis. Child. 26: 542 (Dec.) 1923.

than in vivo. The proportions that we used are given in the accompanying tabulation.

A number of variations in the order of combining and the method of mixing these ingredients were tried, but finally this procedure was adopted: Rennin was added to the milk or milk modifications in 150 cc. Erlenmeyer flasks, and these were permitted to stand at 40 C. for fifteen minutes to give opportunity for a clot to form. Finally the pepsin and hydrochloric acid were introduced drop by drop with constant mixing. The flasks were placed in a rotating shaker which turned in a vertical plane from thirty to fifty times a minute in an incubator kept at from 40 to 42 C. Digestion was allowed to proceed for periods of four and six hours. By comparing the soluble nitrogen in the filtrates of the digested and undigested mixtures, we measured the amount of peptic digestion that had occurred.

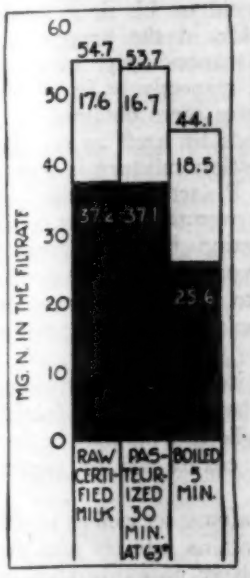

Chart 1.—Comparison of raw, pasteurized and boiled milk, representing increase in total soluble nitrogen in milligrams by digestion of 20 cc. in milk. In charts 1, 2, 3 and 4 the shaded column represents the milligrams of nitrogen in the filtrate of the milk mixture before digestion; the open portion of the column, the increase in nitrogen following peptic digestion; the upper figure is the sum of the nitrogen in the mixture before and after digestion.

Direct filtration of the milk mixtures was impossible because of the colloidal state of the protein. After trying a number of precipitating and adsorbing reagents as well as several kinds of filters, we finally resorted to simple dilution with an equal volume of water. At the end of the digestion period the additional water was added to each flask and the mixtures were again shaken five minutes to insure thorough mixing before filtration. A quantitative determination of nitrogen in these filtrates was then made by the direct nesslerization micro-Kjeldahl of Koch and McMeekin.[3] The results are shown graphically in the accompanying charts.

Raw, Pasteurized and Boiled Milks.—Chart 1 illustrates the effect on digestion of heating milk. The shaded column in each case represents the milligrams of nitrogen in the filtrate of the undigested milk mixtures. The open portion of the column represents the increase in soluble nitrogen as a result of peptic digestion under the conditions of the experiment. The sum of the shaded and open portions equals the total soluble nitrogen in the digested mixtures.

We observe, in the first place, that the soluble nitrogen in boiled milk is about 33 per cent less than in raw or pasteurized. This decrease in solubility is undoubtedly the result of heat coagulation of some of the proteins. However, the change in the condition of the proteins favors peptic digestion, as shown in Chart 1. And if we consider the ratio of digested nitrogen to total soluble nitrogen, it will be observed that this is considerably higher for boiled milk than for raw or pasteurized. While the physical change in the curd may be a factor in this demonstrated increased digestibility, we believe that the heat denaturization of the proteins also plays a part.

3. Koch, F. C., and McMeekin, T. L.: J. Am. Chem. Soc. **46**: 2066, 1924.

There are frequent illustrations of the effect of denaturization of the protein on ease of digestion. For example, raw egg white is much less readily digested by pepsin and trypsin than is heat coagulated egg white. Also the white of fresh eggs is less readily digested than is that of stale eggs.

Acid and Alkali Milks.—Next we compared in a similar way the various acid and alkali modifications that have been in more or less general use. The possibility of adding phosphoric acid to milk was suggested in connection with another line of work that we have under way. The proportions used in these milk modifications as well as the p_H of the milk modification itself, and of the digestion mixture after the addition of hydrochloric acid and enzyme solutions, is given in the table. In chart 2 are shown the results of digestion of these mixtures. All of these figures represent averages of a minimum of six determinations.

Proportions of Acids and Alkalis Used in Milk Modifications

Milk Modification	Amount per 20 Cc.	Amount per Liter	p_H	p_H of Digestion Mixture
1. Milk			6.5	4.7
2. Hydrochloric acid	0.5 cc. normal	25 cc. normal	5.5	3.86
3. Lactic acid	0.16 cc. U. S. P. lactic acid	8 cc. U. S. P.	4.0	3.3
4. Lactic acid milk (cultured)			4.15	3.69
5. Lemon juice	0.42 cc. lemon	21 cc. lemon	5.41	3.76
6. Orange juice	1.12 cc. orange	56 cc. orange	6.06	4.4
7. Raw tomato juice	1.2 cc. tomato	60 cc. tomato	6.23	4.66
8. Canned tomato juice	1.2 cc. tomato	60 cc. tomato	6.26	4.74
9. Phosphoric acid	0.5 cc. normal	25 cc. normal	5.66	4.3
10. Sodium citrate	0.0864 Gm.	65 grains, 4.320 Gm.	7.17	5.5
11. Sodium bicarbonate	0.0864 Gm.	65 grains, 4.320 Gm.	7.66	6.35
12. Lime water	1.1 cc. saturated	55 cc.	6.63	5.07

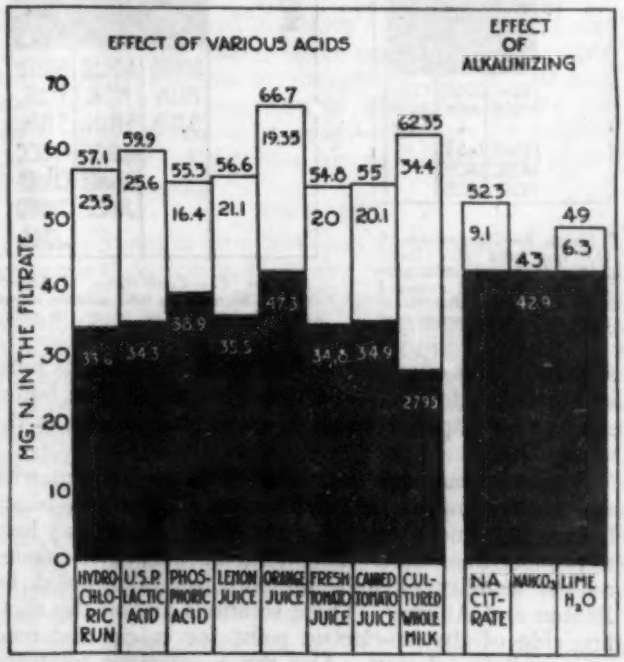

Chart 2.—Effect of p_H and various anions on solubility and peptic digestion of raw milk proteins.

Variations in Solubility of Milk Proteins.—One of the outstanding facts in this series of experiments is the effect of the various acids and alkalis on the solubility of the milk proteins. This is shown in the soluble nitrogen of the undigested mixtures.

As one would expect, increased acidity within the range of these experiments increases the precipitation of proteins. This variation in solubility of the proteins with change in p_H is, of course, due to the amphoteric character of the proteins. In an alkaline medium they act as acids and form soluble salts with bases. In an acid medium they act as bases and form soluble salts with acids. Within their iso-electric range they are least soluble.

In the case of fruit juices, other components are fully as important as the acidity. The introduction of alkali salts of weak acids acts as an additional buffer tending to increase the solubility of the proteins. This effect is somewhat evident when lemon juice is added, but especially marked when orange juice, with its high citrate content and low acidity, is used. The nitrogen of the orange juice itself is not more than one-tenth that of the increased soluble nitrogen in the undigested

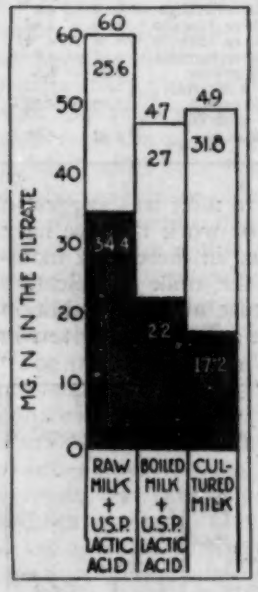

Chart 3.—Comparison of (1) raw milk plus lactic acid, (2) boiled milk plus lactic acid and (3) cultured lactic acid milk; determinations run on the same day.

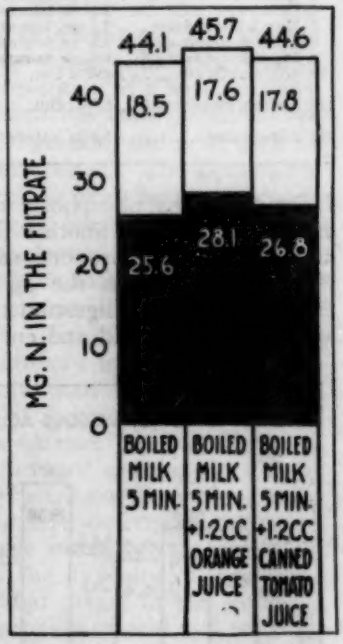

Chart 4.—Comparison of boiled milks: increase in total soluble nitrogen of digestion of 20 cc. in milk.

filtrates. This change in solubility of the proteins must be accounted for by the introduction of alkaline buffer salts or by a specific effect of some ions present in the orange juice.

A similar increase in soluble protein is shown with the addition of alkalis, sodium citrate, sodium bicarbonate and lime water. A number of factors may help to produce this effect. The marked influence of citrates on the stability of milk proteins has been noted by Benton and Albery.[4] These solutions are on the alkaline side of the iso-electric point for casein and tend to keep it in solution. Also the p_H of these mixtures is unfavorable to rennin action, so a well defined clot never formed.

Peptic Digestion.—The effect of p_H on peptic digestion is obvious from chart 2. It is impossible to state definitely the p_H range through which pepsin will act. Its optimum p_H is quoted as between 2 and 3. But the minimum acidity at which it will act varies considerably with the kind of protein, the presence of inorganic salts and of certain specific inhibiting ions, the temperature and probably many other conditions. These experiments indicate that at a p_H of 5 or above, peptic digestion is seriously interfered with.

As previously stated, in all the digestion experiments we added to certified milk or to our milk modifications the equivalent of 30 cc. of tenth normal hydrochloric acid per hundred cubic centimeters of milk plus rennin and pepsin. This gave to raw milk a p_H of about 4.7. When additional hydrochloric acid or U. S. P. lactic acid was added to certified milk in the proportions stated and the p_H was correspondingly lowered, increases of 38 and 50 per cent, respectively, in soluble nitrogen of the digestion mixtures were obtained.

Cultured lactic acid milk stands by itself as regards digestion. The p_H of the digestion mixture is somewhat higher than that of U. S. P. lactic acid milk, yet the increase in soluble nitrogen over that of raw certified milk as a result of digestion is much greater (about 100 per cent). This favorable effect on peptic digestion we ascribe in part to the soft, permeable curd, and in part to the denaturization of the protein by partial autolysis.

Lemon juice milk in spite of its low p_H gives somewhat less favorable results for peptic digestion (about 20 per cent increase over raw milk). This may be due to the inhibiting effect of the citrate ion on pepsin action.

Orange juice milk is digested almost as well as lemon juice milk, although it also contains citrates and the p_H is considerably higher. We have no explanation to offer for the apparent favorable effect of orange juice on digestion.

Phosphoric acid milk is of interest. The rennin curd formed when phosphoric acid was added to milk was hard and doughy. We have not laid much stress on the curd modification because of the thorough mixing necessary to insure uniform distribution of the enzyme. Still, the changed character of the curd in the presence of phosphoric acid was so marked that it seems the obvious explanation of the lessened digestion even at a p_H lower than 4.7, although the presence of the phosphate (PO_4) ion may also be a factor.

Egg yolk was added to all these milk modifications, with no apparent effect on either the soluble nitrogen or the peptic digestion.

Alkalizing milk, although it always increases the soluble protein in the undigested filtrate, checks peptic digestion most decidedly. In sodium bicarbonate milk, which is most alkaline, peptic action is completely inhibited.

Leaving out of consideration the breaking up and solution of the casein curd, it is difficult to say just how important peptic digestion of milk is as a preparation for tryptic action. It may be that pepsin splits certain linkings not attacked by trypsin. Or, on the other hand, peptic action may accomplish little more than denaturization of the protein similar to what is brought about by heat and autolysis.

U. S. P. Lactic Acid and Cultured Lactic Acid Milks.—In chart 3, comparison is made of raw milk plus U. S. P. lactic acid, boiled milk plus U. S. P. lactic acid, and cultured lactic acid milk. Experiments were run in duplicate on the same day. The results are in line with those given in the preceding chart. Raw milk with U. S. P. lactic acid shows the same increase in digestion over raw milk alone. Boiled milk with acid shows the same decrease in soluble nitrogen

4. Benton, Anne G., and Albery, H. G.: J. Biol. Chem. **68**: 251 (May) 1926.

because of heat coagulation and an increase in digestion due to the greater acidity.

Cultured lactic acid milk is a medium that is constantly changing. Different samples vary in their soluble nitrogen content probably because of partial autolysis during souring. The sample used in this set of experiments gave lower values both for soluble and for digested nitrogen than the one previously used. (Compare charts 2 and 3.) However, the amount of digestion in the second sample was comparable to that of the first sample and greater than either of the two U. S. P. lactic acid milks.

Effect of Acid and Alkali Milks on Gastric Secretion.—The question arises whether alkalizing or acidifying milk influences gastric secretion. In an attempt to answer this question we fed three Pawlow pouch dogs with untreated milk, hydrochloric acid and lactic acid milks, and the alkali milks. The gastric juice collected from the pouch was uncontaminated by food and therefore was a fair sample of the actual secretion. Each milk modification was fed a number of times, but there was no difference either in the volume secreted or in the free or total acidity over a two hour period after feeding. There is, of course, the possibility that continued feeding of these milk modifications might bring about a change in the character of the secretion.

Effect of Milk Modifications on the Curd Formed in Puppies' Stomachs.—Young puppies (aged from 4 to 8 weeks) were also fed 100 cc. of these milk modifications, and after intervals of one-half, two and three hours the curds were recovered by vomiting induced by apomorphine (0.25 mg. per kilogram). It is of interest that while in the stomachs of adult dogs raw milk forms only a custard-like curd, in young puppies the curd is large and inclined to be tough as in human beings.

At the end of one-half hour after feeding 100 cc. of raw milk the curd was usually recovered as one large, tough mass. Boiled milk, hydrochloric acid and lemon and orange juice milks were recovered in fine curds about the size of a split pea. With U. S. P. lactic acid milk and cultured lactic acid milk the curds were like coarse sand. Alkali milks were entirely fluid. This agrees in general with the work of Brennemann [5] on the human being.

In a second series of feedings in which the milk was retained two hours, the curds all tended to be firmer and to coalesce into larger masses, although this was much less marked in acid milks and in boiled milk than in raw or pasteurized milk. The raw and pasteurized milk curds were frequently forced through the esophagus with such effort that small furrows were formed by the folds of the mucosa. With these large curds there was little or no liquid recovered. With boiled milk and the acid milks, on the other hand, some fluid was always vomited with the curd, and such large masses of curd as had formed disintegrated easily with pressure. The finest curds were obtained with the U. S. P. lactic and cultured lactic acid milks in which the casein had been precipitated before feeding.

In two hours, the alkali milks had been neutralized by the gastric secretion and distinct curds had formed.

Acidity of Gastric Contents.—The free and total acidity of the gastric contents at the end of one-half hour and two hours were determined in each case. Free acidity was found at the end of one-half hour only when acid milks were fed, and the total acidity per cubic centimeter was approximately the sum of the normal acidity when raw milk was fed (about 1.2 cc. fortieth normal) and the acid introduced in the milk. When sodium bicarbonate milk was given, the combined acidity was decreased, probably as a result of volatilization of carbon dioxide after reaction with hydrochloric acid.

At the end of two hours, except in the case of raw milk, the fluid recovered averaged from 5 to 7 cc. as compared with from 40 to 50 at the end of one-half hour after feeding 100 cc. of milk. After the longer interval the total acidity per centimeter was about the same irrespective of the kind of milk fed. The average titration was from 2.8 to 3 cc. of fortieth normal sodium hydroxide to neutralize 1 cc. of fluid. Only rarely was there free acidity at the end of two hours, and then never more than 0.5 cc. fortieth normal.

The hydrogen ion concentration of the vomitus was determined, but these results were frequently vitiated by the presence of duodenal contents and saliva. But when the vomitus was free from bile the p_H range was from 2.8 to 3.3. Raw, boiled and U. S. P. lactic acid milks all gave p_H values within this range.

In other words, these results lead to the conclusion that in the dog there is no immediate response in secretion of hydrochloric acid as a result of feeding modified milks. The changed p_H of the gastric contents in the early part of digestion is the result of acids or alkalis introduced in the milk. After the curd has had opportunity to form, the whey seems to pass rapidly from the stomach and the acidity then present is the result of normal gastric secretion.

These experiments with puppies raise the question whether the improved digestion of the acid and boiled milks is not due to the effect on the curd formation and to denaturization of the protein rather than to a lowered p_H. Our experiments lead us to believe that the lowered p_H can be of great importance only during the early stages of digestion before the whey has passed from the stomach.

SUMMARY

Experiments in vitro were run to determine the effect of peptic digestion on fresh raw, pasteurized and boiled milk, cultured lactic acid milk and also on raw milk to which hydrochloric acid, U. S. P. lactic acid, phosphoric acid, lemon juice, orange juice, fresh and canned tomato juice, sodium citrate, sodium bicarbonate and lime water had been added. The results show that these various modifications affect the solubility of the milk proteins as well as the digestibility.

The solubility of milk proteins is decreased by boiling, and by such increased acidity as occurs in the range of these experiments.

The solubility of milk proteins is increased by the introduction of weakly acid anions, by buffer salts and by autolysis.

Digestion experiments in vitro indicate that aside from the physical character of the curd there are several factors which influence peptic digestion of milk proteins. The most important of these aids to digestion are a lowered p_H and previous denaturization of the protein.

Boiling milk definitely reduces its soluble protein content but facilitates peptic digestion.

The excellent results noted with cultured lactic acid milk are in all probability due to the combination of small curd formation, a low p_H and the tendency to denaturization of its proteins.

5. Brennemann, Joseph: Boiled versus Raw Milk, J. A. M. A. **60**: 575 (Feb. 22) 1913.

The total soluble nitrogen of the orange juice milk (56 cc. of orange juice per liter of milk) was even greater than that of cultured lactic acid milk. This favorable action of orange juice has been repeatedly demonstrated.

The lemon juice milk (21 cc. of lemon juice per liter of milk) shows somewhat less digestion in vitro than other acid milks of a similar p_H.

The results obtained when the modified milks were fed to young puppies show that raw and pasteurized milks form large, tough curds, while boiled and acidified milks form very small curds. As digestion progresses there is a tendency on the part of all the curds to coalesce and to become firmer, although the boiled and acid milk curds are soft and easily broken with pressure. Alkalizing milk prevents any curd formation until the milk has been in the stomach longer than one-half hour. At the end of two hours, considerable curd formation has taken place, some of large size.

Determinations of the acidity of the gastric contents of puppies indicate that added acids lower the p_H only during the early stages of digestion. By the end of two hours the whey of the milk has largely disappeared from the stomach, carrying with it the added acids.

The greatest value of all these milk modifications may lie in the soft, broken curd, which exposes a large surface to the digestion juices and to denaturization of the proteins.

From results obtained with Pawlow pouch dogs there seems to be no immediate response in a changed gastric secretion either in volume or in acidity as a result of feeding alkalized or acidified milks.

Considering the results of in vitro experiments on peptic digestion and in the character of the curds obtained after feeding puppies the various milk modifications, cultured lactic acid milk is superior to all other acid milks. However, orange juice gives the highest total soluble protein. Both orange and lemon juices introduce vitamins, mineral constituents and additional alkaline buffer salts and seem to be the logical choice for continued feeding as additions to raw, pasteurized or boiled milks.

Orange juice is recommended in the amounts of 60 cc. as the maximum to the liter (2 ounces to the quart) of milk, in the mixture.

In younger infants, when less than 1 liter of milk is used in the mixture, the quantity of fruit juice is proportionately lessened. The mixture should be stirred while the fruit juices are being added.

In addition to one of the fruit juices, yolk of raw egg with its high iron and high fat-soluble vitamin content can be added to advantage,[1] beginning with one-fourth yolk at 4 weeks of age and increasing to a whole yolk by the fourth month.

When boiled milk is used, fruit juices and egg yolk are added to the mixture after cooling.

The Kidney and Chloride Concentration.—The use of a salt-free diet in the treatment of renal edema has also not fulfilled our original expectations. The pendulum has, in fact, swung in the opposite direction, and the rôle played by the chlorides in the production of renal edema is regarded by many authors as altogether subservient to that of the proteins of the plasma. It is widely believed that loss of protein through the damaged renal epithelium leads to such a diminution in the plasma protein content and so alters the osmotic relationships between plasma and tissue fluids that water leaves the blood and enters the tissues.—De Wesselow, O. L. V.: *Lancet*, Sept. 18, 1926.

THE PRODUCTION AND HANDLING OF HUMAN MILK*

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The production and handling of human milk by the Children's Welfare Federation of New York was begun, Oct. 6, 1921. From that date to May 1, 1926, 5,296 quarts represents the total amount that has been produced and distributed by this agency. For the first three years only one station was in existence, but since then three stations in different sections of the city have carried on the work.[1] The milk is collected only in these stations and none is now accepted unless it is expressed in the station under the eye of the matron in attendance.

The women sit in screened booths and they are thus visible only to the matron who watches and advises during the progress of the milking. The duties of the matron consist in instructing and supervising the mothers, sterilizing the bottles, keeping records, and filling the orders. Milk is collected at the stations between the hours of 10 a. m. and 3 p. m. Later in the day, she goes out to visit new mothers in order to enlarge her clientele.

A mother can come in once or twice a day, and if she lives at a distance her car-fare is paid if she can produce ten or more ounces. It is astonishing how much milk can often be secreted when the breast is properly handled. One mother supplied us with milk for eleven months and frequently gave us 40 ounces a day beside completely satisfying her own infant. Another mother, 26 years old, has now three children—the oldest 4½ years, the second 2 years, and the third 6 months. She has nursed these three children, who are pictures of health, and at the same time sold to the federation 400 quarts of her extra milk, which has netted her an income of more than $1,700, during the four years. Another healthy young mother earned $987.98 with her extra milk during a year's lactation, and nourished her own baby as well. Lactation can be prolonged to the fifteenth and even the eighteenth month, and the composition varies but little from the earlier to the later period.

The technic of collection is as follows: The breast is not drained for an hour before coming. The mothers are taught to wash their hands with running water and soap before expressing their milk; the matron washes her hands with running water and soap, and then cleanses the mothers' nipples with boiled water and a cotton pledget, one nipple at a time, the matron not permitting the mother to express milk from a nipple that has been touched by her clothing until again cleansed. A clean towel is tucked in the clothing under the breast, also covering the lap, and a sterilized graduate is placed on her lap. The mothers are taught how to strip their own breasts and become very efficient in this practice. Pumps of any kind have not been used. The milk is transferred from the graduates to sterile gallon bottles, pooled, and place in a refrigerator to cool ready for distribution into smaller sterile bottles on receipt of orders. The length of time required by mothers to express their milk varies. One mother who has sold her milk to us during three periods of lactation

*Read before the American Pediatric Society, Niagara Falls, N. Y., May 31, 1926.

1. Those interested in our earlier efforts are referred to the writer's article, "The Operation of a Breast Milk Dairy," J. A. M. A. 81: 200 (July 21) 1923.

can express 16 ounces in half an hour. Fifty minutes to express 12 ounces is, however, about the average time.

Mothers whose babies are registered with a baby health station, with babies making a normal gain in weight each week, are eligible to sell their breast milk over and above the quantity needed for their own babies. The baby is weighed every two weeks to insure a normal gain. Should a loss of weight occur, the mother discontinues giving milk until her own baby is normal. No physical examination of the mother is made and no especial diet is recommended other than plain nourishing food. An effort is made, however, to teach personal hygiene. Ten cents an ounce for the first 5 ounces is paid for the milk, and 15 cents an ounce if more is given. Checks to cover each week are given on Tuesday to every mother. The milk collected each day is distributed according to the number of orders on hand. The greater the number of orders, the less amount given to each patient, as it is our principle to refuse no patient but reduce each order to meet the demand.

Assays of Forty-Four Different Samples of Pooled Mother's Milk

Specific Gravity	Fat	Protein	Lactose
1031	3.8	1.5	7.0
1037	4.2	1.3	6.3
1032	3.2	1.12	6.5
1025	3.4	1.5	5.1
1037	4.5	1.55	7.4
1029	5.6	1.5	6.8
1031	3.6	1.5	6.8
1032	3.6	1.5	7.2
1029	3.8	1.5	6.5
1028	3.6	1.5	6.2
1033	3.8	1.5	7.3
1032	3.6	1.5	7.2
1030	4.2	1.5	6.8
1029	5.0	1.5	6.7
1032	3.6	1.5	7.2
1033	3.7	1.1	5.8
1033	2.01	1.28	6.05
1033	3.06	1.5	7.4
1030	2.50	1.17	6.43
1029	2.2	1.6	6.3
1030	3.4	1.5	6.6
1027	4.50	1.10	6.31
1030	4.0	1.31	7.0
1032	3.8	1.5	7.2
1029	4.48	1.023	6.39
1034	2.45	0.48	6.7
1030	3.7	1.5	6.2
1031	3.1	0.4	6.2
1030	1.5	0.75	2.5
1027	4.4	1.5	6.1
1029	4.7	0.9	5.8
1022	2.2	0.8	3.0
1032	3.5	1.5	7.2
1036	3.3	1.5	8.1
1036	5.2	1.5	6.5
1030	4.0	1.42	7.05
1032	3.4	1.5	7.1
1024	6.1	1.55	5.35
1030	3.6	1.5	6.7
1025	3.0	1.62	7.11
1032	4.2	1.5	6.1
1030	3.6	1.5	6.7
1037	3.45	1.44	7.61
1030	3.6	1.5	6.7

We have had twenty mothers at one time during the summer months, but from twelve to fifteen is the average number at one time.

A specimen of the pooled milk is analyzed every month. The assays given in the accompanying table were made by the Babies' Hospital, the Long Island College Hospital and the Lebanon Hospital. These show that the fat, protein and lactose are fairly uniform when the milk is thus collected and pooled, and in this way is similar to the herd milk of cows.

Two series of bacterial counts obtained by the standard plate method were made at the health department laboratory. In the first series, two specimens of pooled raw milk a few hours after collection averaged 12,550 colonies per cubic centimeter. After twenty-four hours' standing in an icebox at about 45 F., the average colonies were 38,425. After forty-eight hours, the colonies averaged 3,580,500 per cubic centimeter. In the second series, the counts were somewhat higher in specimens of pooled milk collected on another occasion. Pasteurized specimens averaged about 100 colonies per cubic centimeter.

Through the kindness of Mr. Fowler, two series of experiments on the keeping qualities of the milk were made at the Walker-Gordon Laboratory.

First Series.—Pooled milk was transferred to Walker-Gordon bottles, hermetically sealed, and kept in the refrigerator at 40 F.

Half of sample, received, February 3, was sealed raw, and kept well through February 6. February 8, it had a disagreeable odor. February 11, it was quite sour. The other half of the sample was boiled ten minutes, which gave it a caramel color and some precipitation. When opened, February 10, it was sweet. February 17, it was still sweet, but fat was forming quite a firm layer and not emulsifying when shaken.

Sample 2, received, February 4, was heated in a sealed bottle at 155 F. for thirty minutes. This was opened, February 11, and again, February 17, and pronounced in perfect condition.

Sample 3, received, February 5, was heated to 167 F. for twenty minutes. This was not opened until February 26 and was then found in perfect condition, with no perceptible odor.

Second Series.—Pooled milk was kept in ordinary bottles with rubber stoppers at a temperature of 60 F.

Half of sample, received, February 24, was kept raw. It had a disagreeable odor, February 26, and was sour the following day. Half of the sample was pasteurized at 155 F. for ten minutes. It had a bad odor, March 1, and was quite sour, March 3.

Sample 2, received, February 25, was boiled three minutes. It had a bad odor, March 2, and was sour, March 3.

Sample 3, received, February 26, was boiled five minutes. It was in perfect condition, March 3, and had a slight but not objectionable odor, March 4.

These experiments seem to show that human milk acts much as cow's milk in keeping qualities under similar conditions.

The difficulties of the work as here operated consist in securing a steady and continuous supply of mothers, in advertising and popularizing the sale of the milk, and in preserving the milk so as to regulate supply and demand. We have heretofore directed the purchasers to pasteurize the milk at once which is supplied in the raw state, but no milk older than 24 hours has been sold. As the demand is very irregular, we have lately concluded to pasteurize it ourselves, thus being able to keep it for a few days to meet the varying demand. Another reason for stressing pasteurization is that no Wassermann test is done.

Perhaps the best future solution of this problem will lie in the direction of drying the milk according to the method of Drs. Emerson and Smith.[2]

We charge 25 cents an ounce for those who can pay this amount, and 15 cents an ounce to hospitals. About one fourth of the milk collected is given away to needy and desperate patients, and this adds much to the cost of the undertaking. It now costs the federation 18 cents an ounce to collect, ice and distribute the milk. In 1922, the cost was 13 cents. The increased overhead is due to more careful supervision, clerical work of keeping accounts, records and the like.

During 1925, 170 babies were supplied by the federation; forty-six were reported as having died, only eleven of whom received more than 100 ounces of the milk; twenty-four were lost sight of and 100 recovered. To some of these babies, this milk offered the last chance

2. Emerson, P. W., and Smith, L. W.: Dried Human Milk, Am. J. Dis. Child. **31**:1 (Jan.) 1926.

for life. The desperate condition of the patients is shown by the reported causes of death, prematurity, pyloric stenosis, intestinal obstruction and malnutrition heading the list.

This plan of furnishing human milk should come to stay, as it is the only practical way of reducing much of the early infant mortality.

In addition to this accomplishment, an interesting by-product of the undertaking is the relief of poverty in families in which healthy mothers can easily furnish extra milk and thus aid the family budget. Not a few young mothers, owing to extreme poverty, are obliged to go out to work, which is good neither for her baby nor for herself. This plan affords the opportunity of staying at home, looking after her own baby, and at the same time helping another baby in dire straits. It is thus in a broad sense a true community service.

Lying-in and obstetric wards theoretically should furnish needed breast milk, but these institutions usually require any spare milk for their own inmates and are thus loath to undertake any such work. The experience of the federation shows that any baby health station or community health center can inaugurate and carry on this beneficent scheme. It has demonstrated a plan that can be put in successful operation all through the country.

51 West Fifty-First Street.

THE STERILIZATION OF LOCAL AND GENERAL INFECTIONS

EXPERIMENTAL AND CLINICAL EVIDENCE OF RESULTS OBTAINED BY INTRAVENOUS INJECTION OF MERCUROCHROME-220 SOLUBLE *

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In an exhaustive article on the history of the intravenous injection of drugs, Fortescue-Brickdale [1] states that as early as 1656 serious attempts were made to treat diseases by intravenous therapy, beginning with Sir Christopher Wren, the architect and astronomer, who carried out extensive experiments on animals in which he injected liquors into the veins. Since then the history of intravenous therapy contains some of the greatest names in medicine. Baron Percy thus treated tetanus in 1840, and Magendie hydrophobia and cholera, in 1823. In 1869, Halford experimented on animals and human beings with injections of quinine and phenol (carbolic acid). From 1890 to 1900, the subject received great consideration, and Fortescue-Brickdale classified the work as follows:

1. Injection of drugs intended to increase the resistance of the patient to infection. (*a*) Landerer's method. (*b*) Gautier's method.

2. Injection of drugs intended to destroy or injure the cause of the disease. (*a*) Baccelli's method. (*b*) Maguire and Ewart's method. (*c*) Credé's method.

Landerer investigated the effect of balsam of Peru in pulmonary tuberculosis. Gautier introduced sodium cacodylate in 1899, and the interest that this excited is demonstrated by numerous articles. In 1890, Baccelli reported thirty cases of severe malaria successfully treated by intravenous injections of quinine. His work has led to wonderful progress in the treatment of malarial fevers. He also introduced the use of mercuric chloride in many different types of infections, and reported some remarkable results. Maguire, following Ernest Lane, investigated mercuric cyanide for intravenous injection. While used for various infections, mercuric cyanide, intravenously injected, remains one of the most important methods in the treatment of syphilis. Credé, following the demonstration of Halsted of the germicidal value of metallic silver, brought out colloidal silver (collargol), and injected from 1 to 2 per cent solutions intravenously in cases of arthritis, gangrene and other infections, with some remarkable results. He was followed by Mills, who reported various types of local infections and rheumatism that have been cured by colloidal silver.

The animal experiments carried out by various authors never furnish results comparable with or as satisfactory as those employed in human diseases, and the failure of these experiments was erroneously allowed to condemn definite demonstrations of efficacy made on human beings. Ewart suggested that the clinical successes obtained by colloidal silver and strong silver protein (protargol) may be due to other action than antisepsis, but Fortescue-Brickdale insisted that this did not explain the discrepancies between the clinical and the experimental effects, and concluded therefore that intravenous therapy was not successful. Both clinical and laboratory experimenters continued their work, and various articles detailing limited experiences, some of which were apparently quite brilliant, appeared; but the reactions and failures were usually sufficient to cause discontinuance of the work.

Then came Erhlich, who in 1907 began his work, in which he studied a great series of dyes and other compounds for their bactericidal efficiency and therapeutic effect on infections in animals when injected intravenously. The clumination of this research came when he announced the discovery of arsphenamine as a cure for syphilis and relapsing fever, and brought out his series of papers on "therapia sterilisans magna." In his address before the 1913 congress of medicine in London, in which he summarized his laboratory and clinical researches, he predicted a great future for intravenous therapy with the object of combating infections and infectious diseases.

During the war, Levy-Bing told me of the remarkable disappearance of acute epididymitis following intravenous injections of neo-arsphenamine, and Frouin showed me his interesting experiments at the Pasteur Institute with intraperitoneal injections of a tin preparation in the treatment of staphylococcic infections. DeHeran also informed me of his work with intravenous injections of copper sulphate in streptococcic infections. This work, following the remarkable results obtained by antiseptic treatment of wounds in the armies in France, stimulated me to repeat these experiments and to carry out additional laboratory and clinical work on my return from France.

Two years before we had begun studies on antiseptics at the Brady Urological Institute. Interesting results were reported by White, Davis, Swartz and others. This work was now resumed with redoubled energy, and a long series of compounds, mostly with dyestuffs that had been prepared by White, were investigated in the bacteriologic laboratory, in an effort to find a drug of high germicidal power and comparatively nonirritating which could be used in wounds and on mucous membrane with impunity and in the blood serum with comparatively little loss of germicidal

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Fortescue-Brickdale: Guy's Hosp. Rep. 58: 15-80, 1904.

efficiency. From these 265 compounds, number 220, to which was given the name of mercurochrome, was selected as best answering the desiderata mentioned above.

In 1919, Young, White and Swartz presented an extensive series of bacterial, animal and clinical experiments which demonstrated the great clinical value of this drug, and a huge literature now embracing almost every branch of medicine attests its great value.

Our early experiments showed that it could be introduced intravenously with impunity in comparatively large doses. This was confirmed by Piper in both animal and human experiments. Piper was unable to satisfy himself that mercurochrome was definitely curative against septicemia, and the first convincing demonstration of this sort was the following case:

A man, aged 44, was admitted to my service at the Brady Urological Institute in December, 1922, with double pyelonephritis. Following ureteral catheterization he developed septicemia, and on the second day was so desperately ill that his life was despaired of. Blood culture showed 140 colonies of *B. coli* per cubic centimeter. The medical consultants gave him four or five hours to live. He was then given 34 cc. of 1 per cent solution of mercurochrome (5 mg. per kilogram) in the veins of the right arm. Within six hours, the temperature fell to normal. The next morning the blood was sterile, and the patient was awake and ate his breakfast. The blood culture was negative and he was practically well.

The amazing result obtained in this case led to enthusiastic use of the drug in other cases of septicemia and general and local infections in our service. I was soon able to present to various societies [2] an increasing series of cases which demonstrated successfully, to my mind, the fact that in mercurochrome we had a drug of great value in the intravenous treatment of general infections.

The first demonstration of its value in the cure of localized infections (abscess) was that of a young man, who came to me, June 21, 1923. Following an operation on the bladder he developed an ascending retroperitoneal infection, which localized posteriorly as a large indurated mass. After the injection of 27 cc. of 1 per cent solution (5.4 mg. per kilogram) intravenously, the temperature rose from 104 to 106, and then rapidly fell to normal. The next morning the mass was much softer, and within three days had completely disappeared, and the temperature was practically normal.[3]

Our preliminary reports of successful cases have been followed from time to time with increasingly great collections of clinical reports, which we have received from friends in various countries, hospitals in Baltimore, and elsewhere. Our most extensive report [4] cited in detail the histories of 210 cases and the laboratory work that preceded or accompanied them. Since then other papers on various phases of the subject have appeared from this clinic, and our conclusions have been verified by observers elsewhere, who in a series of papers have brought together an increasing number of cases of general and local infections that have been successfully treated by the methods we employed. In our earliest papers we frankly gave reactions and other disagreeable features of the treatment, and publications are not wanting to accentuate these inconveniences and even to assert that the method was dangerous.

Other experimenters have appeared with detailed descriptions of work on animals, some of which have verified our conclusions and others have taken the contrary view. It seems incumbent on me, therefore, in this paper to present the result of a very exhaustive study of cases which have been laboriously collected with detailed histories and temperature charts, kindly furnished by interested clinicians all over the country. I have not included cases that have been reported in a fragmentary way or mere analyses of the work of others which have appeared in the journals or have been sent to us.

The present report includes 680 cases and comprises not only septicemias and general infections of almost every known type, but also a great group of infectious diseases, local infections, abscesses, deep and superficial, acute and chronic.

TABLE 1.—*Results in One Hundred and Seventy-Three Cases of Septicemia Treated with Mercurochrome-220 Soluble Intravenously*

Origin of Sepsis		Cured or Permanently Improved	Action of M-220 Doubtful	Improvement Only Temporary	Failed	Total
Genito-urinary	Old cases	1	0	1	0	2
	New cases	15	0	0	5	20
	Total.....	16 (72.7%)	0	1 (4.5%)	5 (22.7%)	22 (100%)
Traumatic or postoperative	Old cases	8	1	2	1	12
	New cases	13	0	1	5	19
	Total.....	21 (67.7%)	1 (3.2%)	3 (9.7%)	6 (19.4%)	31 (100%)
From throat Infection	Old cases	5	0	1	0	6
	New cases	1	0	1	0	2
	Total.....	6 (75.0%)	0	2 (25.0%)	0	8 (100%)
From ear or lateral sinuses	Old cases	1	0	1	0	2
	New cases	10	0	0	2	12
	Total.....	11 (78.6%)	0	1 (7.1%)	2 (14.2%)	14 (100%)
From osteomyelitis or abscess	Old cases	3	0	0	3	6
	New cases	4	0	0	0	4
	Total.....	7 (70.0%)	0	0	3 (30.0%)	10 (100%)
Puerperal	Old cases	12	4	0	4	20
	New cases	29	4	1	12	46
	Total.....	41 (62.2%)	8 (12.1%)	1 (1.5%)	16 (24.0%)	66 (100%)
Endocarditis	Old cases	2	0	0	5	7
	New cases	2	0	4	5	11
	Total.....	4 (22.2%)	0	4 (22.2%)	10 (55.5%)	18 (100%)
Focus unknown	Old cases	1	0	0	1	2
	New cases	2	0	0	0	2
	Total.....	3 (75.0%)	0	0	1 (25.0%)	4 (100%)
Grand total.....		109 (63.0%)	9 (5.2%)	12 (6.9%)	43 (24.8%)	173 (100%)

I will first present a summary of the cases of septicemia, in which the diagnosis in most instances has been confirmed by careful blood cultures or by unmistakable clinical evidence. They are grouped according to the original focus of infection from which the septicemia arose, as shown in table 1. The twenty-two genito-urinary cases show 72.7 per cent cured or permanently improved as a result of mercurochrome therapy. Of those septicemias whose origin was traumatic or postoperative (thirty-one cases), 67.7 per cent of the patients were cured; of throat origin, 75 per cent; of the ear and the lateral sinuses, 78.6 per cent; those from osteomyelitis, 70 per cent. The series of puerperal septicemia, sixty-six in all, representing many desperate cases with extensive local

2. Eighth District branch of the New York Medical Society, Oct. 4, 1923; Southern Medical Association, Nov. 13, 1923; Southern Surgical Association, Dec. 11, 1923. Young, H. H., and Hill, Justina H.: The Treatment of Septicemia and Local Infections, J. A. M. A. **82**: 669 (March 1) 1924.

3. Young, H. H.: Bull. Johns Hopkins Hosp. **35**: 14 (Jan.) 1924.

4. Young, H. H.; Hill, Justina H., and Scott, W. W.: The Treatment of Infections and Infectious Diseases with Mercurochrome-220 Soluble, Arch. Surg. **10**: 813 (May) 1925.

infection of the uterus and adnexa, often accompanied by pelvic or general peritonitis, showed failure in only 25 per cent of the cases. In septicemia associated with endocarditis, the results were very poor; definite improvement in only 22 per cent of the cases and deaths in 55.5 per cent. Most of these were cases of *Streptococcus viridans* infection, which is notoriously difficult to combat. While it has been frequently possible to sterilize the blood, it has been impossible to reach the organisms situated deep in the great excrescences of exudate on the heart valve. Little is to be expected with any form of antisepsis, unless used very early. Even including these endocarditis cases, in our series of 173 cases of septicemia, the ultimate fatalities were only 24.8 per cent, and the definite cures or marked improvement apparently due to the drug, 63 per cent.

When we compare this with the results obtained in the treatment of similar series of desperate cases by other means, and particularly when one inspects the temperature charts, which show almost immediate drop of the temperature to normal and rapid marked improvement of the patient, and especially when one reads the enthusiastic comment on many of these cases by unbiased clinicians who have reported them, one cannot refuse to believe that in the intravenous injection of mercurochrome we have a remedy of great value in the treatment of septicemia.

To give an idea of the variation in treatment which these cases have received, I will cite a series of twenty-four cases (table 2) all of which were thought to be cured by intravenous injections of mercurochrome.

In Cases 2, 13, 22, 26, 27, 28 and 45, which ended fatally, three of the patients received only one injection each, two received two injections of small dosage, and two received three of moderate size. In none of these seven cases did the patient receive two injections of 5 mg. per kilogram. It seems fair to state, therefore, that either the treatment was inaugurated too late or was not as vigorous as was given in the successful cases cited in table 2.

It seems evident, therefore, that in septicemias doses of 5 mg. per kilogram should be used and repeated as often as necessary or as possible.

Of the twenty-four cases, all ended in recovery. The diagnosis was clinical septicemia in five cases; positive

TABLE 2.—*Summary of Twenty-Four Cases of Septicemia All Said to Be "Cured" by Intravenous Injection of Mercurochrome-220 Soluble*

Case	Age	Conditions in Addition to Septicemia	Blood Culture	Mercurochrome: No. of Doses	Mercurochrome: Milligrams Per Kilogram
1	40	Pyelonephritis	Bacillus coli.....	1	5
3	30	Traumatic cellulitis.	Staphylococcus	3	1.7, 1.7, 1.7
4	2	Tonsillitis; abscess..	Streptococcus	5	4, 3, 4, 4, 6
5	46	Postoperative condition	Staphylococcus albus	2	5, 5
6	58	Traumatic cystitis..	Staphylococcus	2	5 (?), 5 (?)
7	7	Traumatic osteomyelitis	Streptococcus viridans, staphylococcus	1	5
8	?	Infected hand cellulitis	Staphylococcus aureus	3	3, 2, 1
15	4	Scarlet fever; tonsillitis; adenitis	Streptococcus hemolyticus	1	7.5
16	6	Pharyngitis	Streptococcus hemolyticus	2	8, 8
18	38	Puerperal sepsis; pharyngitis	Pneumococcus IV...	2	5, 7.5
19	..	Tonsillitis; phlebitis	Diplococcus	1	5 (approx.)
21	7	Mastoiditis	Streptococcus	1	5
23	3	Osteomyelitis; abscess	Staphylococcus? ...	2	6?
24	40	Furunculosis; abscess of groin	Staphylococcus aureus	4	4 (?), 3, 2, 4
29	16	Pelvic abscess; furunculosis	Staphylococcus, gonococcus	1	5
30	25	Puerperal infection..	Staphylococcus	6	3, 3, 5, 5, 5, 5
31	24	Puerperal infection..	Streptococcus, pneumococcus	2	5, 5
32	32	Puerperal infection and pneumonia	Streptococcus, pneumococcus	1	5
33	20	Puerperal infection..	Streptococcus ?	6	3, 4, 3, ?, ?, ?
34	18	Puerperal infection..	Streptococcus ?	1	5 (?) approx.
35	23	Puerperal infection..	Streptococcus ?	2	4.6, 4.6
36	22	Puerperal infection..	Streptococcus ?	1	5
40	22	Endocarditis; arthritis	Streptococcus hemolyticus	3	5
56	9	No focus found.....	Streptococcus hemolyticus	1	5

TABLE 3.—*Summary of All Recorded Cases (Six Hundred and Eighty) Treated with Mercurochrome Intravenously*

Type of Case	Old Cases	New Cases	Total	Cured or Improved	Action Doubtful	Improvement Only Temporary	Failed
Abscesses:							
A. Bone	0	1	1	1	0	0	0
B. Liver and subdiaphragmatic	0	3	3	3	0	0	0
C. Lung	0	2	2	2	0	0	0
D. Pelvic	0	1	1	1	0	0	0
E. Superficial	3	3	6	6	0	0	0
Anemia, pernicious....	0	13	13	10	1	2	0
Anthrax, facial.....	0	1	1	1	0	0	0
Arthritis:							
A. Not gonorrheal.	5	5	10	7	0	1	2
B. Gonorrheal	11	13	24	22	1	0	1
Asthma	0	1	1	1	0	0	0
Biliary infections.....	0	2	2	2	0	0	0
Blastomycosis	0	1	1	0	0	0	1
Bronchitis	0	2	2	0	0	1	1
Cellulitis	11	19	30	23	2	1	4
Colitis, ulcerative.....	0	7	7	6	1	0	0
Empyema	0	2	2	1	0	0	1
Encephalitis:							
A. Acute	2	3	5	5	0	0	0
B. Encephalitis residuals	0	7	7	0	0	0	7
Erysipelas	7	25	32	28	0	1	3
Erythema madidans...	0	1	1	1	0	0	0
Furunculosis and carbuncles	4	5	9	9	0	0	0
Gangrane:							
A. Gas	1	2	3	2	0	0	1
B. Diabetic	1	0	1	1	0	0	0
Genito-urinary, not gonorrheal:							
A. Abscesses, perirenal, renal and prostatic..	4	4	8	8	0	0	0
B. Cystitis	3	5	8	8	0	0	0
C. Pyelonephritis and pyelitis....	23	25	48	39	0	1	8
D. Nephritis	0	1	1	1	0	0	0
E. Prostatitis and vesiculitis	1	5	6	6	0	0	0
Gonorrhea (see arthritis):							
A. Abscesses	2	3	5	5	0	0	0
B. Epididymitis	4	17	21	17	1	0	3
C. Prostatitis	4	3	7	4	1	0	2
D. Urethritis	15	10	25	13	1	0	11
Gynecologic infections:							
A. Salpingitis	0	7	7	6	0	0	1
B. Miscellaneous.....	0	2	2	2	0	0	0
Leprosy	0	44	44	28	0	0	16
Lymphatic infections:							
A. Adenitis	0	6	6	6	0	0	0
B. Lymphangitis ...	0	1	1	0	0	0	1
C. Lymphangitis of "filarial type".	0	2	2	2	0	0	0
Malaria:							
A. Benign tertian...	0	10	10	10	0	0	0
B. Quartan	0	1	1	1	0	0	0
C. Malignant	0	1	1	0	0	0	1
D. Mixed or undifferentiated	0	16	16	14	0	0	2
Madura foot.....	0	2	2	2	0	0	0
Malta fever.....	0	1	1	1	0	0	0
Meningitis	6	4	10	3	0	1	6
Multiple focal infection	1	0	1	1	0	0	0
Ophthalmic infections.	0	2	2	2	0	0	0
Osteomyelitis	0	3	3	3	0	0	0
Pancreatitis, acute.....	0	1	1	0	0	0	1
Paresis	0	2	2	0	0	1	1
Pericarditis	0	2	2	2	0	0	0
Peritonitis	4	8	12	6	1	1	4
Plague (bubonic)	1	12	13	3	0	0	10
Pleurisy	0	2	2	2	0	0	0
Pneumonia	21	13	34	26	1	1	6
Poliomyelitis	2	1	3	3	0	0	0
Psoriasis and other skin conditions.....	1	3	4	4	0	0	0
Rocky Mountain fever	1	3	4	1	0	0	3
Scarlet fever.....	1	3	4	4	0	0	0
Septicemias (see separate tables)	57	116	173	109	9	12	43
Thrombophlebitis	3	2	5	4	0	0	1
Tonsillitis	0	2	2	2	0	0	0
Typhoid	5	7	12	11	0	0	1
Ulcers	1	4	5	5	0	0	0
Totals	206	475	680	498	19	23	141
				74.4%	2.8%	3.4%	19.0%

blood cultures were obtained in seventeen; streptococcus, nine; staphylococcus, six; pneumococcus, three; diplococcus, one and *Bacillus coli*, one. The dosage of mercurochrome was as follows: Nine patients received one injection, in every case, 5 mg. per kilogram or more; one patient received 7.5 mg. per kilogram, another 8 mg. per kilogram twice, and three five or more injections of from 4 to 5 mg. per kilogram. No patient developed nephritis.

Our accumulated experience has shown that when the original focus of infection was extensive and the bacteria encompassed within extensive inflammatory masses, exudates or abscess cavities where they could not be reached by the circulating blood, little was to be expected unless drainage could be afforded in addition to the intravenous therapy. When the lesion, however, was not too extensive, even local effects of remarkable benefit were often encountered.

The results obtained in 680 clinical cases treated with mercurochrome intravenously are given in table 3, the various diseases being alphabetically arranged. Time does not permit me to refer more than briefly to this extensive series of cases, of which we have detailed notes and temperature charts in most cases. The old cases referred to in the first column have been cited before.[4]

I will call attention to a few particularly interesting cases. Following the demonstration by Hill and Scott that mercurochrome was eliminated in sterilizing quantity (1:5,000) through the bile ducts, we were prepared to believe that mercurochrome, intravenously administered, would be of great value in hepatic and intestinal infections. The three cases of liver abscess, all of which were cured, present really remarkable results. In all three, following laparotomy and discovery of an apparently hopeless condition with multiple liver abscesses, the abdomen was closed and mercurochrome given only as a last resort. But the patients recovered. In the two cases of lung abscess recorded by C. R. Davis of Detroit, the disappearance of a large, purulent mass, as shown by the roentgen ray before and after, was indeed remarkable.

The thirteen cases of pernicious anemia, in ten of which the intravenous injections of mercurochrome were followed by immediate improvement, furnish strong support of the belief, which has been gaining ground in recent years, that pernicious anemia is the result of a deep seated chronic infection.

The case of anthrax, which was associated with extensive edema of the face and neck and was thought to be surely fatal, is another remarkable instance of the effect of mercurochrome, which has been verified by extensive series of animal experiments with anthrax infections which I will detail farther on.

In arthritis, both nongonorrheal and gonorrheal, the improvements effected by intravenous injections have been indeed most amazing. In many instances the relief is almost immediate, and the rapid disappearance of severe acute arthritis almost unbelievable. I know of no more positive and definite proofs of the value of intraveneous injections of mercurochrome than these thirty-four cases.

Among the thirty cases of cellulitis are a goodly number of deep seated infections due to either streptococcus or staphylococcus which were resistant to serums, vaccines and surgical treatment. The case of Dr. Finney, in which all efforts had been unavailing and the patient thought to be almost moribund, is an example of some of the startling results that have been obtained. Failures (12 per cent) were indeed small when we consider the gravity of many of these cases.

The results obtained in seven cases of ulcerated colitis, in which the seven were said to have been rapidly cured, is an excellent refutation of the assertion which has been made by some of our critics that mercurochrome caused severe and permanent injury to the intestines, as will be shown farther on. The lesions found may be due to infection and not to the drug, although marked intestinal irritation may undoubtedly follow large doses.

The five cases of acute encephalitis, in all of which the patients recovered, furnish some really remarkable histories. The case reported by Dr. Lewellys F. Barker seems a quite positive demonstration of the value of this drug in such cases.

The thirty-two cases of erysipelas furnish ocular proof of the local effect of intraveneous injections of mercurochrome. The almost immediate cessation of febrile and irritant symptoms and the amazing rapidity with which the skin lesion is cleared up is remarked on by many of our reporters. This, and the cases of furuncle and carbuncle, offer as definite experimental evidence of the curative effects of these treatments as one could wish from any series of laboratory tests. It is only necessary to observe boils that have affected the patient for months disappear within a few days, to be certain of the efficacy of the treatment.

We have observed one of the three cases of gas gangrene here reported. In this an extensive inflammation of the chest wall, accompanied by extensive gaseous crepitation and very virulent infection with the bacillus of Welch, disappeared completely after three intravenous injections of mercurochrome.

Among the genito-urinary infections there have been many failures, particularly in the chronic cases of pyelonephritis due to *B. coli*. The figures herein recorded undoubtedly give too optimistic a picture. The details of cases in which the drug failed were not at hand. Nevertheless, many brilliant cases of perirenal and renal infections, cystitis, prostatitis and vesiculitis, particularly those due to coccus infections, have been encountered. Infections within the urinary passages should always be accompanied by local treatment, lavage and other various antiseptics, because it has been demonstrated that little hope of sterilizing the urine or the cavity of the urethra or bladder by purely intravenous therapy is to be expected. On the other hand, we have shown conclusively that the customary local treatment can be greatly aided by simultaneous intravenous injections of mercurochrome. This has been particularly true in acute and chronic gonorrheal infections, in which a number of really remarkable sterilizations have been effected in cases in which the infection had long resisted most vigorous local treatment.

The papers of Whitman, Allen, Potter and Redewill, Waterfield, Roeder, Judd and others have been decisive in demonstrating the great value of this new form of therapy in acute and chronic, local and generalized gonorrheal infections.

The gynecologic infections (except septicemia) are represented by only nine cases, too few to be of much value, but there is apparently definite evidence of the value of the treatment in these cases, although surgical incision is necessary when considerable accumulations of pus are present. We do not propose to replace surgery where operation is indicated.

Hopper's work with mercurochrome in malaria at Tampico, Mexico, has apparently demonstrated a defi-

nite place for intraveneous mercurochrome in the treatment of malaria, particularly of the tertian variety. Other published and unpublished reports which we have received testify to the value of the drug in such cases. These observers do not suggest mercurochrome to replace quinine or other standard methods of therapy, but they stoutly assert that mercurochrome is of great value when used intermittently, or in cases that are resistant to other forms of treatment.

In our tabulation, we next come to a long list of various diseases in which only a few cases have been subjected to intravenous mercurochrome therapy. In most cases the number is too small to use in drawing conclusions. In meningitis it is apparently of little or no value. In peritonitis it should certainly only be used as an aid to surgery; but some of the reports that we have received indicate that in a few instances a cure has resulted in cases that seemed hopeless. The three patients with bubonic plague who recovered were thought by their reporters to have been definitely saved by the intravenous injections of mercurochrome.

We have recorded here only thirty-four cases of pneumonia. The great series which Freeman and Hoppe have recently reported (100 cases) have not been included, as the histories were not in our possession. The mortality (16 per cent) shown in our series is not strikingly good, but many of the cases recorded were so serious that the observer thought that the use of the drug was definitely beneficial. In a recent personal report Dr. Lewis D. Hoppe of Atlanta, wrote:

> At present our series of cases of pneumonia in children numbers almost 200, half of which were treated with mercurochrome and the other half used as controls. The average total duration of illness in the control group is fourteen days, while in those treated with the drug the average duration is six and one-fourth days. The mortality in those not treated with mercurochrome is 36.5 per cent, and in the others treated intravenously with mercurochrome, 10.8 per cent.
>
> Our present opinion of the doses for children is difficult to explain. Up to 14 Kg. we used 5 mg. per kilogram; beyond that point, 4 or even 3 mg. per kilogram, depending on the condition of the child.
>
> Most of our reactions have been mild, especially in infants. Some of the older children have a chill followed by a rise in temperature. Frequently the stools are loose and stained red with the drug. We have never found any changes in the urine, either during the illness or as late as two years after.

Several observers have reported definite and steady improvement in pulmonary tuberculosis when, in addition to the usual climatic treatment, repeated injections of small doses of mercurochrome, intravenously, were given. We were prepared to expect results when, in addition to the tubercle bacilli, other infections, staphylococci, pneumococci and streptococci, were present to give the case a septic character. The analysis of the cases reported to us would seem to indicate that intravenous mercurochrome has a definite field in such cases. The almost universal improvement noted is explained in this way. We have had no definite experimental or clinical experience that mercurochrome is of value against the tubercle bacillus itself; but, when combined with appropriate climatic and postural treatment, we believe that it may be of considerable assistance in the treatment of these cases.

In the twelve cases of typhoid on which we have records, there seem to be definite evidences of the value of the drug. This was anticipated, for experiments with the drug in the biliary tract have led us to expect mercurochrome to be of distinct value in biliary typhoid carriers and in typhoid itself. Much greater clinical work will be required before definite assertions can be made.

I have not cited here the use of mercurochrome in leprosy because I have no completely detailed case reports at hand; but in a report of forty-four cases from the United States Public Health Service, definite improvement in 63 per cent of the cases is attributed to mercurochrome, and in 36 per cent the betterment is said to have been really remarkable, with the disappearance of extensive ulcers, and even leprous involvement of the larynx, nose, eyes and ears. No definite cases of absolute cure, however, have been reported.

Among the ulcers studied was one of a young man who for six months had had a gradual extending serpiginous ulcer of the penis, which had become so painful that large doses of morphine would not control it and he was on the verge of suicide. The immediate relief and rapid disappearance of the chancroid was a beautiful demonstration of the local effect of the intravenous injection of mercurochrome in such cases. Similar cases are to be found in the reports of Allen and others.

Coming to the final totals, we find that among the 680 cases, immediate great improvement or cure has been attributed to the intravenous injection of mercurochrome in 74.4 per cent of the cases, and complete failure in 19.6 per cent. I have attempted to record with absolute honesty and accuracy all the failures in which I could obtain the history of the case, and among these are the five necropsy cases reported by St. George. I do not deny, however, that in many instances frank failures have been encountered even where other similar cases have responded favorably to the treatment with mercurochrome intravenously. In other and more extensive papers I have attempted to analyze and explain some of these failures. In many cases, however, I admit a complete inability to explain why the drug, often amazingly effective in many cases, is utterly futile in others.

It has been asserted that mercurochrome is dangerous, particularly to the kidneys. By analysis of all the cases that we have treated at the Brady Urological Institute, the general falsity of this assertion was definitely proved. While we admit that in many instances a mild albuminuria, sometimes accompanied by casts, persisted for a few days or sometimes as long as a week, I have not seen a single case among the 100 or more which I have personally treated in which a definite permanent injury to the kidney has resulted, from even repeated injections of mercurochrome. At my request, Dr. Rawley Penick, an assistant to Dr. McCallum in the pathologic department of the Johns Hopkins Hospital, has prepared a detailed study of the necropsy records of patients dying of sepsis, from which I take the following:

> The object of this review is to go over the necropsy material in order to compare the kidney lesions found in a few unselected cases of septicemia which had received no intravenous therapy with those cases of septicemia that had received mercurochrome intravenously.

Dr. Penick presents a detailed study of each case, which I would like to give in extenso; but lack of space forbids. His conclusions, after analyzing seven mercurochrome cases and ten cases in which it was not used, is as follows:

> The number of cases is small but sufficient to demonstrate that there are no important lesions in the kidney which could be attributed to mercurochrome.

ANIMAL EXPERIMENTS

In a previous paper [4] we described experiments with animals which showed that mercurochrome injected intravenously was of definite bacteriostatic and inhibitive action. I wish to record here a study of the results of intravenous mercurochrome in experimentally produced infections in animals which were undertaken by Miss Justina H. Hill and myself with the object of proving the possibility of thus obtaining intravenous antisepsis of a definite therapeutic curative value.

Rabbits were inoculated in one of the ear veins with a virulent pneumococcus emulsion or culture. Temperatures were always taken before inoculation and then at frequent intervals after inoculation. The temperature of the normal rabbits in this series varied from 101 to 103 F. The temperature invariably rose after injection within a few hours, as might be expected with the injection of any foreign protein, but instead of falling again to normal it invariably stayed up, usually around 106, until the animal recovered or died. In several cases the injection of mercurochrome caused a rapid drop in the temperature. The presence of organisms in the blood stream was determined by blood cultures, taken daily or oftener. In all the animals, positive blood cultures were obtained after inoculation. The untreated controls and the treated animals that died showed positive blood cultures throughout. The treated animals that recovered gave negative cultures after treatment, in one case the blood being sterilized twice, with a relapse and positive culture between treatments. The animals that were not treated all died; all showed pneumococci in the spleen and often in the heart blood after death. The treated animals that died often gave the same picture in the spleen, less often in the heart blood.

TABLE 4.—*Results in Pneumococcus Septicemia in Rabbits*

	Untreated Controls			Treated Animals		
	Series 1	Series 2	Total	Series 1	Series 2	Total
Total no. of animals	5	5	14	8	6	14
Number recovered.	0	0	0	4	3	7
Percent recovered.	0	0	0	50%	50%	50%
Duration of illness in fatal cases						
(1) Minimum....	2½ hours	2 days	1 day	1¾ days	5 days	3¼ days
(2) Average.....	2¼ days	3.4 days	2.8 days	2½ days	6⅝ days	4.6 days
(3) Maximum....	4 days	5 days	4.5 days	4.3 days	8 days	6½ days
Dosage						
(1) Minimum No. injections	0	0	0	1	2	1
Mg. per Kg., mercurochrome	0	0	0	5	10	5
(2 Average No. injections	0	0	0	2.5	2.5	2.5
Mg. per Kg., mercurochrome	0	0	0	12.5	12.5	12.5
(3) Maximum No. injections	0	0	0	4	3	4
Mg. per Kg., mercurochrome	0	0	0	20	15	20

The summary of the findings in the two series of animals treated so far is given in table 4. From this it will be seen that the control, or untreated, animals invariably died, and that of the treated animals 50 per cent recovered, in sharp contrast to the untreated series. Moreover, in the fatal cases the average duration of the disease in the treated cases was 4.6 days; in the untreated controls, 2.8 days.

It would seem that these findings are favorable to mercurochrome. It is doubtful whether better ones could be obtained in such a fulminating type of experimental infection, in which the animal has no opportunity to build up an accompanying immunity, as is clinically possible. With a mortality of 100 per cent in the untreated controls, to save 50 per cent of the treated animals is an excellent indication of the therapeutic action of mercurochrome.

TABLE 5.—*Anthrax Experiments in Guinea-Pigs* *

Set	Controls			Treated		
	Total No.	Lived	Died	Total No.	Lived	Died
1	18	0	18 (100%)	3	3 (100%)	0
2	6	0	6 (100%)	6	2 (33⅓%)	4 (66⅔%)
3	6	1 (16⅔%)	5 (83⅓%)	6	4 (66⅔%)	2 (33⅓%)
4	6	2 (33⅓%)	4 (66⅔%)	6	3 (50%)	3 (50%)
5	24	2 (8⅓%)	22 (91⅔%)	15	10 (66⅔%)	5 (33⅓%)
6	60	5 (8⅓%)	5 (91⅔%)	36	22 (67 1/9%)	14 (38 8/9%)
Totals	120	10 (8%)		72	44 (61%)	

* The treatment consisted of from three to six intraperitoneal injections of mercurochrome, 5 mg. per kilogram, daily, starting the day after inoculation.

We next carried out an extensive series of experiments on guinea-pigs with the anthrax bacillus, which was injected subcutaneously in 192 animals. The striking results obtained are shown in table 5. As seen here, of 120 guinea-pigs that did not receive mercurochrome, only ten lived (8 per cent), a mortality of 92 per cent. Among seventy-two guinea-pigs that received mercurochrome, intravenously, forty-four, or 61 per cent, lived.

These experiments, I believe, furnish definite experimental proof of the possibility of obtaining an intravenous antisepsis of great therapeutic value in the cure of local and general infections. They confirm our clinical studies, presented above, in which similar results have been obtained in 680 clinical cases.

REACTIONS

Elsewhere I have also given in detail the other types of reaction which may follow intravenous therapy with mercurochrome. I have not space to describe these here, but may simply reiterate that our studies showed that in two thirds of the cases there was no reaction, or at most slight, and that marked elevation in temperature often accompanied by chill and followed by sudden drop generally occurred but was usually accompanied by pronounced betterment and often complete cure. Many cases seem to indicate that the febrile reaction is very important in the cure. On the other hand, with small doses (from 2 to 3 mg. per kilogram), splendid results are obtained with no reactions whatever. This has been true even in some cases of severe septicemia, although in the majority of cases in which cure was effected, a dose of from 4 to 5 mg. per kilogram had generally been given, sometimes repeatedly. When full dosage is used, there is indeed need for care, and the interval should be at least three days or more. In most cases unless very fulminating, the smaller doses may be used. Stomatitis is generally the result of multiple large doses. We have occasionally seen slight gingivitis from doses of 3 mg. per kilogram. In our experience, however, this has been very rare.

BLOOD CHANGES

In our early papers we noted a remarkable rise in the red blood cell count after mercurochrome intra-

venously. In one case we noted a rise of one million cells in twenty-four hours. A detailed study of twenty-six cases by Dr. E. C. James showed an average increase of 92,651 red cells within twenty-four hours. This was not accompanied by any pronounced increase in white cells or hemoglobin. It would seem to result, therefore, from stimulation of blood-forming organs.

THERAPEUTIC EFFECT

In previous papers we have pointed out that no rendering of the blood completely germicidal can be claimed. That it is rendered somewhat bacteriostatic and inhibitive is apparently definite. The temperature reaction, sudden rise and immediate drop of from 5 to 10 degrees, is characteristic and certainly means that a pronounced effect is produced which in a large majority of the cases is at once accompanied by marked amelioration of the patient's condition and sterilization of the blood in 75 per cent of the septicemia cases. The rapid drop is similar to that seen in the crisis in pneumonia. In pneumonia cases this curative crises can apparently be brought on at once by mercurochrome, with a lowering of the death rate from 35 to 10 per cent (in Hoppe's series). But whatever the underlying factors are, I believe we have demonstrated conclusively that with mercurochrome we have shown in bacterial infections, local and general, what Ehrlick showed possible with arsphenamine in spirochetal infections, an ability to "sterilize," "cure" or immediately improve the infection. As multiple and repeated doses are frequently necessary, I propose, instead of his "therapia sterilisans magna" that we call it a successful demonstration that curative "intravenous therapy," is an accomplished fact.

ABSTRACT OF DISCUSSION

DR. F. G. DU BOSE, Selma, Ala.: In the clinic of the Vaughan Memorial Hospital, we have used mercurochrome intravenously in a wide variety of diseases, over a period of more than two years. As a rule, it was not given for the purpose of testing its efficiency clinically, but as a therapeutic measure; hence it was rarely used alone, but in association with other usual and accepted surgical or medical treatments for the disease in hand. Twenty-five cubic centimeters of a 1 per cent solution for each 150 pounds (68 Kg.) of body weight was the usual dosage. In the febrile tuberculosis cases, 10 cc. per hundred pounds (45 Kg.) was tried at weekly intervals, and found disappointing as compared with the usual dose at monthly or longer intervals. The latter method had a definite influence on lowering or reducing the temperature to normal. In no instance has nephritis been observed as a sequence of mercurochrome therapy. In those cases in which albumin and casts were present in the urine before mercurochrome was administered, instead of increasing the kidney irritation, the albumin and casts usually have disappeared with the subsidence of the general infection. It should be remembered that almost all of these profound infections, especially when attended with high temperature, so-called general septicemia, have albumin and casts, as a rule, as a sequence of the infection. The most troublesome symptom directly traceable to the effect of this drug is the enteritis, and griping pains, requiring for their relief not only the sodium thiosulphate in 1 Gm. doses, intravenously, repeated once or oftener in twenty-four hours, depending on the severity of the bowel disturbance, but also repeated hypodermic injections of morphine and atropine. The rarest sequence is a stomatitis. We are impressed by the happy effect of sodium thiosulphate in rapidly controlling adverse effects, especially when its administration is coincidental with the onset of these symptoms.

DR. R. J. STROUD, Tempe, Ariz.: I believe in mercurochrome first, last and all the time, but I have not had the brilliant results in many cases that some others have had. Mercurochrome has probably done one or two things in medicine. It has taken the dread away from the gonorrheal type of ophthalmia. Three puerperal sepsis cases were treated with mercurochrome for five days without results. Finally blood transfusion was done. Two of the patients got well almost immediately. Three cases of coincident streptococcic stools and streptococcic bloods ended fatally. We used mercurochrome in these cases every day for five days, without result. Blood transfusion was futile. One other patient suffering from septicemia, undetermined, lived after blood transfusion and after mercurochrome had failed. I had brilliant results once or twice with mercurochrome in gonorrheal epididymitis and sometimes in septic tonsillitis. I had an erysipelas and was treated with antistreptococcic serum. My temperature jumped up to 108 F. and then immediately dropped 11 degrees. I believe that mercurochrome might have done the same thing. Perhaps the mercurochrome on entering the blood makes a protein absorption of some kind with which we are not now familiar, and gives the protein shock of nonspecific proteins which it parallels in action and results. The results obtained by me would show that it is not a sterilization.

DR. FRANK HINMAN, San Francisco: It is perfectly natural that a drug which has been accepted almost universally in infections should not become discredited because of accidents following its use. I have had experience with intravenous use of mercurochrome without having had any of these fatal accidents. At the University of California it was found that there were two distinct types of patients—one patient who will tolerate very well the intravenous use of mercurochrome and another type of patient who is intolerant to the intravenous use of mercurochrome. This work was done first by Drs. Redewill and Potter. They found that with the tested mercury of the saliva, the diphenylcarbazide, one could predict whether a patient would get a serious reaction with the use of mercurochrome intravenously or whether he would tolerate the drug. Patients who showed by this test good tolerance were usually benefited by the drug, whereas those who were intolerant apparently were never benefited. Further work showed that by using sugar in connection with the intravenous use of mercurochrome there were no severe reactions, and so it was not necessary to make the diphenylcarbazide test.

DR. HUGH H. YOUNG, Baltimore: Our experimental and clinical work has now become so extensive that we feel absolutely sure of our position. In the first place, we are confident that even in cases with renal impairment and slight acute nephritis, mercurochrome may be used intravenously without injury to the kidneys; and, in fact, many such cases in which renal infections are present are cured by intravenous injections of mercurochrome. Albumin and casts also come on occasionally after blood transfusions, injections of arsphenamine or serum injections, and are no more to be feared after mercurochrome. We still believe that a dosage of 5 mg. per kilogram is desirable in fulminating cases, such as septicemias, in which one does not dare to wait several days before giving the second treatment. We are uncertain whether the pronounced febrile reaction that follows is an important factor in the cure of these cases or not, but we do not fear such reactions. In desperate cases, an adequate dosage should be used. When the disease is not acutely serious, excellent results are often obtained by starting with small doses and gradually increasing them. We have now a long series of infections of all types in which such treatment has been entirely satisfactory in relieving acute infections of the skin, subcutaneous tissues and arthritis, deep seated gonorrhea and its complications, acute pyelonephritis, particularly due to coccus infections, and many deep seated and localized infections and infectious diseases. When there is a definite collection of pus which may be treated surgically, we do not hesitate to say that surgery should be employed. One should take no chances in dealing with serious infections. In the milder types, one may easily try the intravenous treatment first. We have no hesitation in saying that we believe we have demonstrated on animals and on human beings a definite antiseptic effect leading to resolution of the infectious process

and cure of the patient in a great variety of local and general infections with various types of bacteria. I do not pretend that this method of treatment is always successful, and there are many inexplicable failures in cases apparently identical with others in which the patients have recovered; but such is the experience with other undoubtedly valuable therapeutic measures. The results obtained, however, are sufficiently uniform to warrant the assertion that this therapia antiseptica intravenosa with mercurochrome deserves an important place in the treatment of both local and general infections.

RETROBULBAR NEURITIS IN DIABETES

REPORT OF CASE *

LEE MASTEN FRANCIS, M.D.†
AND
IVAN KOENIG, M.D.
BUFFALO

Apart from the commonly recognized ocular manifestations of diabetes, such as refractive changes, premature presbyopia, cataract and objective fundus changes, there are amblyopias affecting the peripheral and particularly the central visual fields. It is our purpose in this paper to discuss the latter, and to record the clinical history of another case in point.

Retrobulbar neuritis arising in the course of diabetes, the evident result of an endogenous toxin or toxins liberated during the disease, which exercises a selective action on the papillomacular bundle of the optic nerve, is undoubtedly a clinical entity. Leber [1] has reported fourteen cases among fifty diabetic patients.

Foster Moore [2] saw six cases in sixty-one diabetic patients. Wendell Reber [3] reported a case with scotoma for red, which was persistent six years after the attack. Rönne [4] reported two cases studied clinically and at necropsy to which reference will be made later.

One of us [5] reported two cases before this section in 1914. Other scattered reports are found from time to time in the literature, enough to warrant the statement made at the beginning of this paragraph, but, so far as we can gather, the condition is not generally recognized by either clinicians or ophthalmologists. Some confusion probably has arisen because of the striking similarity between this diabetic retrobulbar neuritis and that occurring in tobacco-alcohol amblyopia. Thus, Kato [6] could exclude tobacco and alcohol in only two of sixteen cases he observed. The increased liability of diabetic patients to tobacco amblyopia is well established and is commented on by de Schweinitz [7] and Duane.[8] While retrobulbar neuritis due to alcohol and tobacco often occurs in diabetic patients, sufficient cases are found in the literature in which tobacco and alcohol can be eliminated, to divorce the two conditions. While the series reported by Leber and Moore would indicate that the manifestation is much more frequent than our own or the known experience of others would attest, it is likely more prevalent than is generally supposed. The assertion is ventured that other objective visual disturbances may frequently mask and outweigh central field changes so that they are overlooked in what appear to be the more dominant phases of the disease.

Retrobulbar neuritis of diabetes is most frequent in middle age and, according to Leber, occurs more frequently in men than in women. It is usually bilateral but may involve only one eye. The patients complain of failing central vision, which comes on fairly rapidly, although vision may fail suddenly. The most persistent finding in central field studies is a central or partly central scotoma for red and green, although a red defect alone or a green defect alone may be found. The amblyopia usually gradually disappears in from three to eight months, normal central vision being restored before the disappearance of color scotoma; but the color defect may persist indefinitely, as in Reber's case, in which the scotoma was present six years after the attack. The amelioration of the symptoms shows a definite relation to the disappearance of the ketone bodies from the urine.

In the present state of knowledge, it is impossible to state the precise toxin or toxins which attack the papillo-macular bundle. Glucose, using the term loosely, is evidently a toxic agent manifesting various symptoms in different individuals. Of far more importance in diabetic toxemia are the ketone bodies, beta-oxybutyric acid, aceto-acetic acid and acetone, along with some unidentified organic acids which appear in some cases. The presence of small amounts of these bodies is without apparent harm, but when the substances are formed in excess together with insufficient elimination, definite toxic symptoms arise. This is quite evident from clinical experience and has recently been proved experimentally by Allen.[9] Acetone has not shown itself toxic in the industries, in which, Peterson [10] has pointed out, it is used in large quantities in varnish preparations. This, however, does not exclude its toxic properties in the disturbed metabolism of the human body.

Seven cases of retrobulbar neuritis in diabetic patients have been the subject of pathologic study; namely, those of Nettelship and Edmund,[11] Fraser and Bruce,[12] Schmidt-Rimpler,[13] von Grosz,[14] Wilbrand and Saenger [15] and Rönne. Rönne had the good fortune to study two cases both clinically and also at necropsy. These cases are reported in great detail. He describes the process in the papillomacular bundle as a degenerative one rather than a neuritis and similar to that found in alcohol and tobacco amblyopia except for the presence of "körnchen cells" in diabetes, which are not found in tobacco-alcohol cases. According to Rönne, a special straining method (March's) is necessary to demonstrate the papillomacular bundle, and he is of the opinion that any pathologic examination made without March's method is of very little value.

The following conditions, in addition to outside fundus changes, should be taken into consideration in making a differential diagnosis in a given case: tobacco, alcohol amblyopia, lead poisoning, Leber's disease, diseases of the accessory nasal sinuses, possible pituitary disease, disseminated sclerosis and myelitis.

* Read before the Section on Ophthalmology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

† Dr. Francis died, April 22.

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In the two cases similar to the one to be described in this paper reported by one of us [5] before this section in 1914, one patient, an otherwise healthy girl, aged 8 years, whose vision was reduced to 6/22.3 in both eyes, had bilateral central scotomas for red. Vision was gradually restored to 6/6 on each side in about three months, with coincident disappearance of the scotomas. The girl was carefully searched for other possible causes of the amblyopia. The only positive finding was a marked acetonuria, which disappeared under management with coincident improvement of symptoms. The second patient, a man, aged 31, was the subject of previous attacks of acetonuria. Only one eye was involved, vision being reduced to 6/15. Central field studies revealed a paracentral scotoma for red on the affected side. Accessory sinuses and other possible factors were found to be normal. The urine gave a heavy acetone reaction. Normal vision was restored, together with a fading of the central defect for red in about three months, coincident with the disappearance of the acetone from the urine.

REPORT OF CASE

History.—F. L., a man, aged 56, married, with three healthy children living and well, a chemist by occupation but who of late has done office work, two years and one month previously, in April, 1922, developed diabetic symptoms. In May, he consulted Dr. Byron Bowen, who, at that time, found that the urine contained 196 Gm. of sugar with a trace of albumin, which proved transient. The blood sugar was 285 mg. per hundred cubic centimeters. Under dietary management, the urine became sugar-free and the blood sugar reached normal limits. The patient remained this way for about one year, until May, 1923, when he disregarded his regimen, whereupon glycosuria and hyperglycemia recurred. Insulin was advised by Dr. Bowen but was declined. The patient consulted Dr. Edgar C. Beck in January, 1924, under whose careful observation he has remained since. At this time, Dr. Beck reported the blood sugar as 330 mg. per hundred cubic centimeters, while the urine showed 175 Gm. of sugar. Under dietary restrictions and insulin, glycosuria disappeared, but the blood sugar persisted around 234 mg. Five months later, he again showed sugar in the urine and also the presence of acetone and diacetic acid. No ketone bodies had been discovered in the urine before this time. At this time he complained of great difficulty in reading newspapers, although his vision until then, with the same refractive correction, had been satisfactory. He also observed that when he looked directly at an object, it was blurred. His attending physician placed him in the Buffalo General Hospital, where we saw him in consultation, May 15, 1924.

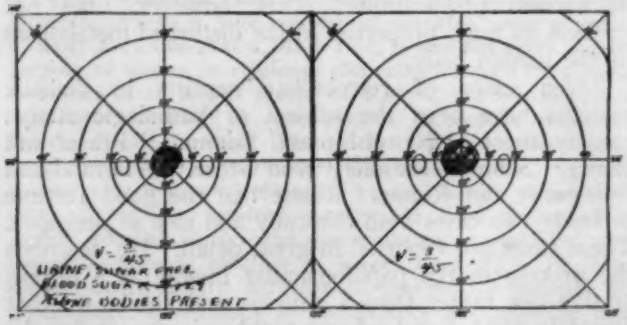

Fig. 1.—Central fields, May 24, 1924. Right eye: artificial light; 1 degree test object; form field full; complete absence of green; red and blue perception in relative area. Left eye: artificial light; 1 degree test object; form field full; green absent; indefinite scotoma for red.

The ocular complaint was inability to read with lenses or without. The patient was wearing plus 2.50 sp. for near. Direct vision was blurred. For years, he had been a regular smoker, consuming in the neighborhood of one-half pound of tobacco a week, with occasional drams of whisky permitted as a part of his diabetic diet. He had taken no drugs not ordered by his medical advisers. His occupation had subjected him to no poisons.

Examination.—He had lost some weight but was not emaciated. His color and general appearance were good. No orbital or ocular tenderness was elicited. The pupils were of normal size, equal and prompt to all reflexes. Tension (tactile) was obviously within normal limits. The peripheral visual fields, tested comparatively at the bedside were full, but the central vision was quite evidently much disturbed in both eyes. Under homatropine, both pupils dilated evenly and promptly.

The ophthalmoscopic examination showed the media clear, save for a few very fine vitreous opacities on both sides. The disk of the right eye was a healthy pink, with sharp margins. The cup was rather large and cylindric in type, with visible lamina. The retinal circulation was of normal ratio with average sclerosis. There was one small yellowish patch (probably hyaline) along the superior temporal vessels, and a similar one along the superior nasal branches. The macular region presented no abnormality. The left eye corresponded to the right, except for the presence of one small punctate hemorrhage along the superior temporal vessel and in the extreme lower nasal quadrant an old patch of retinochoroiditis. A few days later, May 20, the vision was:

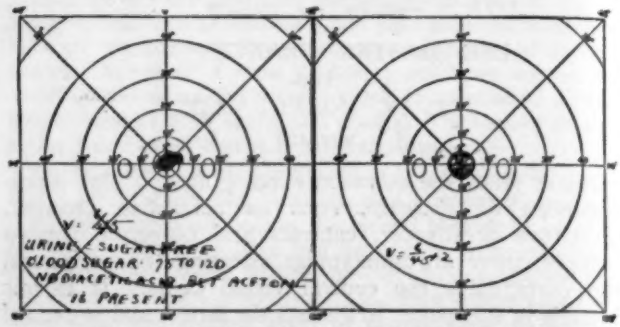

Fig. 2.—Central fields, June 7, 1924 (second month). Right and left eyes: artificial light; 1 degree test object; form field full; color scotoma only for green.

O. D. 3/45 (unable to improve with lenses)
O. S. 3/45 (unable to improve with lenses)

The form and peripheral fields were normal.

The central fields (Lloyd slate) are shown in figure 1.

The right central scotoma was partially absolute, extending outside the 5 degree limit; green was absent; there was red and blue perception in the relative area.

The left scotoma was entirely relative but of similar size to that of the right. Green was absent, and red indefinite.

The urine was sugar free; the blood sugar was reduced to 129 mg., but ketone bodies persisted in the urine. The accessory nasal sinuses were reported free from disease or changes by Dr. John Fairbairn. The other possible causes of retrobulbar neuritis were thoroughly investigated with negative reports. One month after the onset of amblyopia, June 22, 1924, the vision was:

O. D. 6/45 plus 1
O. S. 6/45 plus 2 } Combined vision 6/30

The fundi showed no changes except the absorption of the punctate hemorrhage observed in the left fundus. The central fields are shown in figure 2. The scotomas were smaller. Red and blue had reappeared; green was absent.

The urine was sugar free; it contained no diacetic acid, but acetone was still present. The blood sugar varied from 75 to 120. Two months after the onset of amblyopia, though the fields were not taken, the patient stated that vision had improved so that he could read smaller headlines in the newspapers. The urine was sugar free and contained no diacetic acid; there was a transient trace of acetone.

Three months later, the vision was improving, according to the patient's report. He did not appear for visual examination as we requested.

A last trace of acetone was observed. The blood sugar was around normal limits. Four months later, the patient appeared

for examination. Since our last observation the urine has been sugar free. The blood sugar had varied from 74 to 120 mg. per hundred cubic centimeters, with entire absence of ketosis since August 13. There had been a gradual visual improvement, so that the patient had resumed some of his business duties. Vision was:

O. D. 6/22.3
O. S. 6/12 + 1

The central fields are shown in figure 3.

The right scotoma was within a 2 degree limit with absolute area above; the left when examined was relative.

Five months after the onset, the vision was:

O. D. 6/12 plus —0.50 sp. —0.25 cyl. ax. 105 V. 6/9, plus 3
O. S. 6/7.5 —0.50 sp. —0.25 cyl. ax. 165 V. 6/7.5-1, plus 1
O. D. add plus 3.00 sp. V. J. No. 4 } Combined J. No. 3
O. S. add plus 3.00 sp. V. J. No. 4 }

No scotoma could be made out on the Lloyd slate. At this time, one of us thought there was an increased temporal pallor, although a definite pink zone was observable outside the cup limits. The observation was questioned by the other.

Seven months after the onset, Jan. 2, 1925, the vision was:

O. D. 6/6
O. S. 6/6 plus 2

The field studies were normal.

Fourteen months after the onset, the vision was:

O. D. 6/5-2 —0.37 cyl. ax. 15 V. 6/5 plus add plus 2.50 sp. V. J. No. 1
O. S. 6/5 —0.25 cyl. ax. 165 V. 6/5 plus add plus 2.50 sp. V. J. No. 1

The field studies were normal. The urine was sugar-free. The blood sugar ranged from 70 to 120. No ketone bodies were found.

During the entire time of convalescence, the patient has been permitted his accustomed amount and kind of tobacco, and the amount of whisky allowed by his medical adviser.

COMMENT

The two cases reported before this section in 1914 and the present one fall, in our opinion, into the same group; namely, a retrobulbar neuritis resulting from an endogenous toxin liberated during the disturbed metabolism of diabetes. All presented similar symptoms. All showed acetone reactions, which persisted

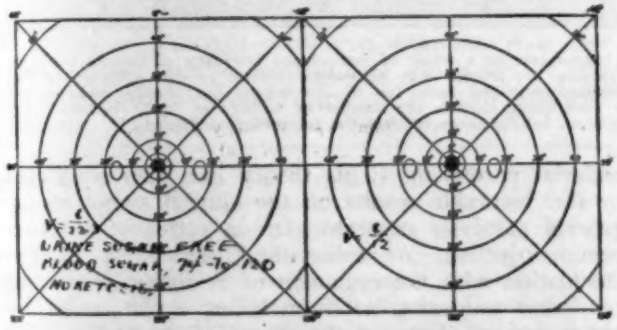

Fig. 3.—Central fields, Sept. 22, 1924 (fourth month). Right and left eyes: artificial light; 1 degree test object; form field full.

during the height of the amblyopia with visual improvement coincident with and corresponding to the disappearance of the ketone bodies from the urine. In the first two cases, tobacco and alcohol were eliminated as possible causal factors, while in the third and last case the habitual amounts of both were permitted during convalescence. Other possible etiologic factors were eliminated with care. We feel justified, therefore, in concluding that these cases are ones of true retrobulbar neuritis, occurring as the result of diabetic toxins and not retrobulbar neuritis occurring in diabetes from exogenous toxins.

CONCLUSIONS

1. Glycosuric amblyopia, involving the central visual fields, the result of an endogenous toxin, is a clinical entity.

2. The precise toxin or toxins cannot be specified, but the intimate relation between the presence of the ketone bodies and especially acetone in the urine, coincident with the amblyopia and their disappearance coincident with visual improvement and the disappearance of scotomas suggest that the ketone bodies may be the index of the toxins or the toxins themselves.

3. Glycosuric amblyopia with central field changes is likely more common than the literature indicates.

4. Routine central field studies should be made in all diabetic patients complaining of visual disturbances.

ABSTRACT OF DISCUSSION

DR. H. P. WAGENER, Rochester, Minn.: In spite of the relative infrequency of toxic amblyopia in patients with diabetes, I believe that diabetes is a possible factor in the production of toxic amblyopia. But I do not believe that it is possible at present to demonstrate as the exciting cause any specific toxic product elaborated in the course of the diabetic process. If the abnormal metabolic substances were directly poisonous to the optic nerve and retina either qualitatively or quantitatively, retinitis and retrobulbar neuritis should occur predominantly in the acute and rapidly progressive types of diabetes. Yet it is unquestionably true that both retinal and optic nerve diseases are found almost exclusively in patients with relatively mild, chronic diabetes. There are several reasons for thinking that acetone and diacetic acid, or the acid bodies, are not directly responsible for the toxic amblyopia seen in diabetic patients. These acid bodies are found from time to time in the urine of the great majority of diabetic patients and are associated with or produce general toxic symptoms in relatively few, and only when present in relatively large amounts. In my experience, diabetic patients with definite acidosis have not shown visual disturbances of the toxic amblyopia type. In recent years a number of epileptic patients, approximately 100, have been treated in the diabetic service at the Mayo Clinic by high ketogenic diets. In these patients, acidosis has been produced intentionally, and acetone and diabetic acid have been present in the urine constantly for several months. None of these patients have had visual disturbances. Diabetic patients in general, and the long standing, chronic cases in particular, are very prone to degenerative complications and especially to vascular degeneration. Arteriosclerosis and gangrene occur more prematurely in diabetic patients than in the average run of healthy persons. Degenerative nerve lesions also, such as peripheral neuritis and so-called diabetic tabes, are relatively frequent in diabetic patients. In the eye, senile cataracts develop earlier and more rapidly in diabetic patients than in the average run of healthy persons. Degeneration of the pigment epithelium of the uveal tract is not uncommon. The characteristic retinitis seen in diabetic patients is most probably due to vascular and consequent retinal degeneration. It is difficult to lay the blame for this degeneration on any metabolic product. The constantly elevated sugar content of the blood over a long period of time may be a factor in its causation, as may also the secondarily increased products of faulty fat metabolism, such as cholesterol and the fatty acids. The process seems to be a hastening and intensification of the vascular and nerve degenerations seen more or less normally in advanced age. These degenerations are apparently progressive and are not greatly influenced by treatment except that they may be retarded or temporarily arrested. I believe that the typical toxic amblyopia of diabetes is that with a gradual onset and a progressive course with little tendency to improve under any form of treatment. As with the retinitis of diabetes, the prognosis is poor. It may, like the retinitis, be primarily vascular in origin. Diabetic patients are also particularly subject to infections, and toxemias from extraneous sources. I believe that the more acute types of toxic amblyopia seen in diabetic patients, which show a tendency to recovery under appropriate treatment, are due primarily to some such extraneous factors, especially to tobacco and to foci of infection.

DR. H. L. HILGARTNER, Austin, Texas: It has been interesting to listen to the statement about acetonuria and the variation in ketone bodies with increasing and diminishing obscurity of central vision and the field of vision in diabetic retrobulbar neuritis. There seems to be no doubt that there is here an endogenous toxin as a clinical entity complicating this particular form of disease. Tobacco and alcohol seem to have been eliminated carefully as possible etiologic factors; nothing is said about the intake of fats which might influence the ketone bodies. It seems highly probable that the ketone bodies or toxins are directly responsible in such cases. It would have been interesting, however, to know the state of the blood pressure at the different periods in the history; and the gastro-intestinal functions with reference to constipation or free open bowels. But there are two other points that seem to be of especial interest in connection with the case that have not been emphasized. The first is the close interrelationship of all the ductless glands in their functions. In Abel's recent lecture in the Kober Foundation, this subject is clearly elaborated, showing that in many recent experiments the suprarenals, the pituitary and the thyroid are definitely associated in carbohydrate metabolism. It would seem that the thyroid should be thought of especially as it is so intimately bound up with the pancreas in its functions, and for the further reason that in many disease conditions of the eye thyroid medication is very serviceable treatment. The pituitary is still more closely alined with the pancreatic function, and much depends on the proper collaboration of all the ductless glands. Might it not be possible that an impaired state of this interrelated function has something to do with acetonuria? The other point in mind is the question of inherited syphilis, probably far sub-Wassermann, but sufficient in its effects on organ and function to produce disastrous results. In collaboration with Lankford during the last several years it has been my experience that many cases of neuroretinitis and various other grave impairments of vision will yield to antisyphilitic treatment along with pituitary feeding, though the Wassermann reaction is negative. It seems that inherited syphilis has a selective affinity not only for the pituitary body in its relation to the eyes, but also for a number of other structures in the third ventricle, which seem to cooperate with the hypophysis in its function as proved by the most recent experiments. This impairment, which can so powerfully influence function and seriously affect the vision, it would seem might be a factor to be considered.

DR. WILLIAM ZENTMAYER, Philadelphia: The close analogy that exists between the retrobulbar neuritis that occurs in diabetes and in tobacco-alcohol amblyopia indicates that they may be due to a common underlying cause. I believe myself that the determining factor in tobacco-alcohol amblyopia is arteriosclerosis. The late age at which it comes on, the fact that arteriosclerosis nearly always is present in the retinal vessels, and the observing in some cases of a few retinal hemorrhages in tobacco amblyopia, suggest to me that the underlying cause in this condition is arteriosclerosis, and I believe also in these diabetic cases. Fifteen years ago I reported a series of four cases of retinal hemorrhage associated with tobacco-alcohol amblyopia, and again recently I reported another case. Dr. de Schweinitz took up the subject a little later, and holds with my contention that arteriosclerosis may be the underlying factor in tobacco amblyopia.

DR. LEE M. FRANCIS, Buffalo: It is very important to distinguish between these cases and those that are due to tobacco-alcohol amblyopia. In our cases we were particularly fortunate in having exceptionally competent internists to study the cases with us. In fact, the last case was referred to us by an internist to explain the patient's relatively sudden onset of blindness. We must take their word for it, and I myself am willing to take it, that they were free from factors other than that produced in the course of the diabetes. Answering Dr. Zentmayer, I will have to quote Ronne—that it is a question of distinguishing microscopically between amblyopia caused by tobacco and that caused during diabetes. He makes the statement that the presence of Körnchen cells, which developed only after special staining methods, constitutes the differentiation between the two conditions.

NONSPECIFIC PROTEIN THERAPY IN GENERAL PARALYSIS

PRELIMINARY REPORT *

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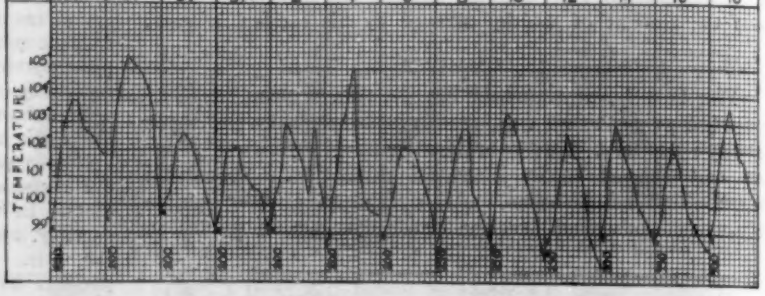
GEORGE W. HALL, M.D.
Douglas Smith Fellow in Physiology, Hull Physiological Laboratory of the University of Chicago
AND
F. J. GERTY, M.D.
CHICAGO

The beneficial effects of malarial inoculation in some cases of general paralysis are now well established.[1] The basic theory of von Jauregg, who introduced the malarial treatment, is that the therapeutic effects are due to the increased temperature resulting from the malarial paroxysm. This theory has been supported by the favorable results on the clinical symptoms of general paralysis reported after a series of subcutaneous injections of tuberculin,[2] the effect of the inoculation with the organism of relapsing fever and remission occurring after maladies accompanied by hyperpyrexia. Data on the effects of inoculation with streptococcus, staphylococcus and typhoid vaccine are, at present, insufficient as a basis from which to draw conclusive evidence.



Increase in temperature as a result of intravenous injections of typhoid combined vaccine. The vaccine was diluted with physiologic sodium chloride solution, so that each cubic centimeter contained from 100 to 200 million dead bacilli. The Arabic numerals under each curve indicate the number of millions of bacilli injected. The small squares indicate hourly intervals after the intravenous injections.

The difficulty involved in maintaining an available strain of tertian plasmodium, the mortality rate due to malarial treatment (from 8 to 12 per cent), and the similarity known to exist between the malarial paroxysms and the method of temperature regulation following the intravenous injection of proteose or typhoid vaccine[3] seem sufficiently significant to warrant a thorough investigation of the effects on the clinical symptoms and serologic conditions of general paralysis resulting from a series of intravenous injections of foreign proteins.

* This work is being carried on at the Chicago Psychopathic Hospital.

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Twelve patients with advanced general paralysis have received (to date) thirteen intravenous injections of foreign proteins in quantities sufficient to produce a chill and fever which resembles the malarial paroxysm. The onset of the chill occurs from one-half to two hours after the injection, and lasts from fifteen to thirty minutes. The temperature reaches its maximum about four hours after the injection. The fastigium varies approximately from 102 to 104 F. Herpes has developed in four of the cases. Efforts are being made to graduate the dosage so that the fastigium of at least 103 F. may be reached after each injection. Our studies of the leukocyte count confirm the reports of previous workers;[4] i. e., at first (at the onset of the chill) there is a leukopenia followed by a sharp rise, which may reach 30,000 per cubic millimeter from six to eight hours after the injection. The improvements in the clinical symptoms at the present time are sufficiently encouraging to warrant our making this preliminary report with the hope that it may be given proper consideration by others who are interested in the treatment of general paralysis. We have been stimulated in the institution of this method of treatment because of the close relationship existing bewteen the reactions following the chills of malaria and those produced by the intravenous injection of foreign protein.

The dissimilarity lies in the production of marked leukocytosis by the latter method. The advantages of the treatment instituted in this series of cases may be briefly stated:

1. The chills can be produced at will.
2. The height of the temperature can be approximately controlled by regulating the dose in each instance.
3. The leukocytosis may be of advantage.
4. The patient is not inoculated with a disease-producing organism.

In selecting the cases as we have done, in that we have avoided giving the treatment to persons subject to serious cardiac and renal complications, it is our belief that the method of treatment which we are following will prove to be of equal value to the malarial treatment, and should have no mortality.

4. Scully, F. J.: The Reaction After Intravenous Injections of Foreign Protein, J. A. M. A. **69**: 20 (July 7) 1917.

Correlation in Medical Teaching.—We can sum up the deficiencies of our preclinical teaching by saying that the laboratory branches are taught from a scientific or an academic point of view. The result is that as starches must be converted by the digestive processes before they can be utilized in the body economy, so knowledge acquired from a scientific or academic viewpoint must be converted into knowledge from a clinical viewpoint before it can be utilized in the process of practical medical education. The clinical teacher must do this in the two clinical years. In doing so it is often necessary almost to reteach the subject matter of the preclinical years, using as a foundation the isolated concepts the student has carried with him. The solution of the problem lies in teaching the laboratory subjects from a clinical point of view. We choose the clinical viewpoint because the ultimate use of the knowledge is to be clinical. The objective, the goal, must ever be kept in sight. It is to care for the human being. Against any such revision of preclinical teaching will probably come the objection that there is insufficient time to accomplish it. If this be true would it not be worth while to reduce the quantity or minutiae of detail in order that what we do teach may later be of real working value? Could we not with profit change from the work of a prodigious feat of memory to a practical and logical process of assimilation? —*South. M. J.* **19**:704 (Sept.) 1926.

THE VAGINAL DOUCHE

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Since the time of Hippocrates, the vaginal douche has been a common item of pelvic therapeutics. It is extensively used by uninstructed women. It is prescribed by many physicians, though condemned by some. As a rule, however, neither patient nor physician has any clear idea of its proper uses and its limitations. While in selected cases douching accomplishes definite good, as actually practiced it is for the most part worthless, if not positively harmful.

According to the results expected, there are three general types of douches. These are used for purposes of (1) simple cleansing, (2) local medication and (3) hydrotherapeusis.

THE CLEANSING DOUCHE

The cleansing douche is ordinarily a short douche, 1 or 2 quarts in volume. It is of indifferent temperature, cool or tepid. While some drug, most often a mild antiseptic, may be added to the douche water, the purpose of the douche is primarily a mechanical cleansing, and a specific effect from the drug is not sought.

In estimating the value of the cleansing douche we may consider that vaginas fall into two groups, the healthy and the diseased.

The healthy vagina has no need of artificial cleansing. Its natural acidity and the bacterial flora normally present operate to maintain proper cleanliness at all times, even after menstruation and after coitus. The truth of this is strikingly illustrated by microscopic examinations of vaginal material made post coitum in the study of sterility.

At the present time certain commercialists, notably venders of antiseptics and of vaginal syringes, are attempting to propagate the idea that the vaginal douche is a necessary part of the fastidious woman's daily toilet—as much so, according to these individuals, as the brushing of the teeth. No doctrine could be more fallacious or potentially more pernicious. The healthy woman has no greater need of a daily cleansing douche than she has of daily gastric lavage.

The diseased vagina obviously requires more than simple cleansing, which by itself is nothing but futile palliation. As an auxiliary to methods of active treatment the cleansing douche may occasionally have a place, although its value diminishes as the efficiency of the treatment increases. For example, a properly fitted pessary does not necessitate constant douching, nor are sterile douches any longer considered to be an essential item in the after-care of plastic operations.

We may therefore sum up the value of the cleansing douche by the statement that it is always either unnecessary or inadequate. Furthermore, it is not without its dangers. By interfering with the normal bacteriology and chemistry of the vagina it may remove the natural defenses of the tissues, and thus defeat the very purpose for which it is used. A particularly unfortunate result of indiscriminate douching is often the improper focusing of the patient's attention on her genital tract, and the foundation of a pelvic psychosis.

THE MEDICATED DOUCHE

Like the cleansing douche, the medicated douche is usually short and lukewarm. It depends for its effect

on the action of some drug, most commonly an antiseptic.

In the great majority of cases in which antiseptic douches are prescribed, the complaint is leukorrhea and the pathologic condition is endocervicitis. Among married women in the prime of life, vaginitis is a comparatively rare disease. Endocervical infections, being deep-seated, are entirely out of reach of any surface application. It follows, therefore, that in such cases the medicated douche is of no greater efficacy than the douche that is intended to be cleansing only; in other words, it is practically worthless.

Douches containing a spermatocidal drug are often used post coitum for contraception. Since Huhner has demonstrated that direct cervical insemination is usually essential to conception, it becomes evident that no method of attack on spermatozoa in the vagina is a reliable preventive measure. Large numbers of cases can attest the truth of this with regard to the douche.

From Huhner's work it also follows that the alkaline douche is worthless in the treatment of sterility. Vaginal acidity is normal, and endocervical acidity cannot be remedied by vaginal douching.

The alkaline douche (a solution of baking soda, or a dilution of liquor antisepticus alkalinus) is useful for washing away thick, tenacious mucus as a prelimniary to examination or operation. It is also of value as a palliative measure in the occasional cases in which an excessively acid vaginal moisture causes external itching or burning.

The acid douche (a saturated solution of boric acid) may be employed whenever the vagina has been invaded by bacteria which flourish in an alkaline medium. This is commonly the case in the vulvovaginitis of little girls, and also in senile vaginitis. So transient, however, is the effect of the douche in these conditions that more efficient means of acidification are usually desirable. One of the best methods is the insufflation of powdered boric acid. The introduction of benign acid-forming bacteria is also a good remedy for vaginal alkalinity, and to this end one may use a short douche of milk which has stood between twelve and twenty-four hours, and is therefore well permeated by the bacillus of lactic acid.

The astringent douche (zinc sulphate, alum or tannic acid) has been much advised in the past for the purpose of "toning up" relaxed and weakened tissues. That the desired effect is obtained from chemical astringents, I doubt; at any rate, hydrotherapeutic douches of the long hot variety are much more efficient.

The deodorizing douche (potassium permanganate or hydrogen peroxide) may be advisable in certain cases of cancer or of fistula.

It appears, then, that medicated douches are of very limited utility. Often they are harmful, irritating the tissues and causing or maintaining a vaginitis. I have seen several severe chemical burns resulting from the injudicious use of antiseptics.

THE HYDROTHERAPEUTIC DOUCHE

The hydrotherapeutic douche produces its effects by the application of water at a given temperature for a given length of time. Of the several varieties of hydrotherapeutic douches, there are three that have particular importance.

The cold douche consists of from 2 to 4 quarts of iced water, and causes a marked but transient local anemia. It is said to be employed by prostitutes to check menstruation. Occasionally it is useful in bleedings of noninflammatory origin, such as the excessive flowing of puberty or of the menopause, though most of such cases are better handled by douches of the long hot type. Perhaps the most important function of the cold douche is to control the bleeding from inoperable cancer.

The short hot douche, consisting of 2 quarts of water as hot as can be borne by the patient, produces vasodilatation and active hyperemia. This douche is employed in all cases in which one desires to increase the blood supply of the pelvic organs. It has a place in the treatment of pelvic hypoplasia, and is also of value in the atrophic changes of senility.

The long hot douche, or depleting douche, involves the application to the vaginal vault of wet heat for a period of at least twenty minutes, and, better, half an hour. Duration, not volume, is the essential feature; but since the one is a function of the other, the volume must usually be between 8 and 12 quarts. The temperature should be as high as the patient can tolerate, ordinarily between 105 and 115 F. Plain tap-water may be used; it is sterile enough for douching, and from the hydrotherapeutic point of view is fully as satisfactory as physiologic sodium chloride or any other solution.

The effect of prolonged wet heat is at first vasoconstriction, both arterial and venous, which allows passive venous congestion to disappear. Then follows a period of normal healthy circulation, often lasting for several hours before the hydrotherapeutic benefit is lost. Varying degrees of the same sort of circulatory improvement may be produced by electricity, massage, or dehydration with glycerin. Of all depleting methods, however, the douche is the most powerful, and it offers the additional advantage that it can be administered by the patient herself at home as often as required.

The long hot douche is among the most valuable of minor therapeutic measures in gynecology. It has a very wide range of application, being indicated in all disorders of which chronic passive congestion is a feature. Included among these are conditions of subacute or chronic inflammation of any of the pelvic structures.

As palliation, the depleting douche relieves pain, limits the spread of inflammation, and helps in the absorption of exudate. In many cases, notably those of endocervicitis and of mild salpingitis, a course of depletion may result in a permanent cure, the improved circulatory conditions allowing the tissues to regain enough of their natural resistive powers so that they are able to overcome infection.

SUGGESTIONS

In prescribing douches of any type it is necessary to be most specific about details, the importance of which the patient rarely appreciates. Not uncommonly, for example, one orders long hot douches, only to find on the occasion of the patient's return visit that she became discouraged over the time and trouble involved and substituted hot douches 2 or 3 quarts in volume—the exact physiologic antidote of what was intended. The housewife readily comprehends the difference between short wet heat and long wet heat if she is asked to recall the appearance of a washerwoman's hands, red and hyperemic after half a minute in the hot soapsuds, but shriveled, white and anemic after half an hour's immersion.

A douche-bag or can ought always to be used; satisfactory results are not obtained with a bulb-syringe.

Ordinarily the bag should hang about 2 feet above the level of the pelvis, since a stream of great force is not required. The nozzle should be large enough so that there is no possibility of its entering the cervix.

All douches must be taken in the recumbent position, preferably with the hips slightly elevated, for only in this way is the vaginal vault properly flooded. The method adopted by most patients is to lie crosswise on the bed, the buttocks at the edge of the bed and the feet on two chairs, with a rubber sheet underneath the buttocks leading down into a pail on the floor. A regular douche pan will be a wise investment if douche therapy is to be long continued.

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THE SURGICAL TREATMENT OF CLEFT PALATE

A NEW METHOD WHICH IS PRIMARILY A RECONSTRUCTIVE APPLICATION OF PARTS OF MANY OLD OPERATIVE PROCEDURES REVISED TO FORM WHAT IS IN EFFECT A NEW OPERATION *

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Before attempting to describe as a new method uranoplastic operative steps which, as stated in the title, are really a reassembling of many old and well known operations in such manner as to form what is in effect a new method of cleft palate treatment, I desire to acknowledge the obligation that is due to many predecessors in this work

Chiefly among these are Sir William Ferguson and J. Ewing Mears, who was followed by Roe of Phil-

Fig. 1.—At left, infant with third degree harelip and cleft palate, showing the associated nasal and premaxillary deformity as described in the text. At right, the same child after operation. The purpose of this illustration is to show what may be accomplished by correct nasal realinement and labial muscular adjustment as influencing the proper replacement of the premaxilla and symmetrical development of the mouth without forcible compression.

adelphia, both of whom did much to improve Ferguson's bone flap operation; also von Langenbeck and Warren, whose mucoperiosteal methods of palate fissure closure probably have given greater satisfaction thus far than any other types of uranostaphylorrhaphy in accomplishing successful postoperative results in this and other countries, and Dr. Charles Mayo, whose enclosing band tension suture suggested the plan of a similar tension suture, differently applied.

Other operative procedures have been described by many and more recent authors whom it would be a pleasure to credit individually, if this were practicable;

Fig. 2.—At left, infant with third degree harelip and cleft palate, showing the associated nasal and premaxillary deformity as described in the text. At right, the same child after operation. The purpose of this illustration is to show what may be accomplished by correct nasal realinement and labial muscular adjustment as influencing the proper replacement of the premaxilla and symmetrical development of the mouth without forcible compression.

but the essential fact to be noted at this time is that it is the combination and arrangement of these various methods that seems to make possible results that could not so confidently be expected from any one of them as usually followed.

My early operations according to this plan were done almost simultaneously at the Wisconsin General Hospital of the University of Wisconsin, St. Mary's, and the Children's hospitals of Milwaukee about April, 1922, but its complete description has been delayed until this time in order that infants thus operated on might become old enough to permit judgment as to whether they would learn to speak more readily than those treated by the mucoperiosteal operation or otherwise.

The indications are that they do suffer less from speech difficulties, and my personal experience thus far leads me to believe that the average of good results is certainly much higher than I have been able to obtain by other methods.

RELATION OF HARELIP TREATMENT TO CLEFT PALATE

Intelligent understanding of operations for the closure of palate fissures necessarily requires preliminary consideration of the elementary principles to be observed in the treatment of harelip, because in the manner in which the lip is treated, in a large measure, will depend the character of the palate fissure, even though nothing is done to the palate directly at the time.

In other words, the operation to close the lip defect should influence the future operative conditions of the palate fissure favorably, by making each step of the necessary correction easier and not more difficult, as so often occurs.

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* Read before the Section on Surgery, General and Abdominal, at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

* On account of lack of space, a number of illustrations have been omitted. They will appear in the article as printed in the Transactions of the Section and in the author's reprints.

In cases of third degree harelip with fissure extending through both the hard and the soft palate, there is always, though in varying degree, associated malposition of the premaxilla, the alar cartilages, the nasal septum with deformity of the tip of the nose and corresponding flattening of the vestibule on one side in single cases, and of both vestibules in double cases. These defects also involve and deform the columna of the nose.

The association of these malformations requires that they be given immediate corrective attention when the lip fissure is closed, so that progressive improvement in the course of development may be assured. Nevertheless, it is important that the harelip operation be performed with the least possible forcible replacement of the premaxilla beyond the actual necessary requirements to permit satisfactory approximation of the lip borders. No compression of the sides of the palate should be applied to force the fissure borders into contact, and even the fixation of the premaxilla by sutures after forcing it into position should be avoided if possible.

NECESSITY OF AVOIDING INJURY TO THE PREMAXILLA AND ALVEOLAR OUTLINE

The reasons for these statements are as follows:

First, any traumatic injury that may be sufficient to affect the developing incisor teeth of the premaxilla may destroy one or more of them; and even though this may not occur, their eruption behind instead of outside the lower teeth (in lingual occlusion) will tend to give an unsightly flat appearance to the anterior part of the face and mouth as development proceeds. Moreover, this is unnecessary because, if left free and unattached, the activity of the muscles of the lip and face if properly adjusted will bring the premaxilla back into place and narrow the palate fissure gradually, but also very considerably, and to that extent simplify the problem of the palate operation.

Fig. 3.—Double harelip, third degree, on one side, first degree on the other, with slight displacement of the premaxilla but nasal defect quite similar to single harelip cases.

Fig. 4.—Correct developmental effect of the immediate nasal and labial correction and the effect on underlying bone and tooth development.

Second, on every hand there is abundant evidence of the permanent disadvantages to health, to the upper dental arch, facial appearance and other undesirable conditions due to forcible narrowing of the bony walls of the palate by immediate compression of the alveolar outline of the mouth.

AGES FAVORABLE FOR OPERATIVE STEPS

Subdivision of the necessary surgical treatments and the sequence of these operative steps in cases of complete fissure of the lip and palate and the ages at which they are performed are important in safeguarding both mortality and operative results, for attempts to do too much at once have been an all too frequent cause of disaster in cleft palate treatment.

My belief is that as soon after birth as the condition of the child and other governing factors will permit, the operation for closure of the harelip should be performed, with simultaneous reconstruction of the deformed nose in such manner as to assure nasal breathing, improve the appearance of the alar outline, straighten the lower border of the septum, and give correct alignment of the lip muscles.

Fig. 5.—At left, infant with double harelip with wide fissures on both sides and the typical premaxillary projection, insufficient development of the columna, deformity of both alae, and flatness of the tip of the nose almost obliterating the vestibulae as described in the text. At right, the same child after operation, showing the tendency to symmetrical nasal and facial development that follows this treatment.

At from 6 to 8 or 9 months old the first step palate operation should be done, and one year later the final operation to make the parts complete before wrong speech habits have become established.

This is the order of procedure that I have followed for many years in the treatment of these cases.

The change now recommended is that instead of closing the anterior part of the palate fissure at the first step operation as formerly, I reverse the order and close the velum and posterior part of the hard palate at the first step. Instead of a mucoperiosteal flap operation according to a modification of the von Langenbeck method which I have previously employed, I now include bone segments with the flaps as in the Ferguson operation, but without the serious objections to that method that it seemed advisable to overcome.

WHY IMPROVED METHODS ARE INDICATED

The reasons for recommending a change of method are that it has long been apparent that even with the greatest care and skill, more or less defective results from the mucoperiosteal flap operation have occurred occasionally, and only the training of extensive experience could reduce their frequency. Therefore more simple and dependable methods are desirable.

Moreover, a review of operations over a period of many years disclosed the fact that while a considerable number of these patients spoke with sufficient distinctness to get on well in ordinary conversation and many of them almost, if not quite perfectly, there was still much to be desired and these were at least a few who

were more or less seriously handicapped by imperfect speech.

In many instances, speech training has been helpful; but notwithstanding the recognized advantage of such training, and with due allowance for the effect of speech habits, it has become very evident that too much attention has been given to the influence of habit and training, and too little to attempting to secure more perfect anatomic conditions.

THE STANDARD REQUIREMENTS OF STAPHYLORRHAPHY

The ideal cleft palate operation, then, must be one that will not deform the mouth but will give the utmost blood nourishment to the flaps, the least possible shortening of the velum, a minimum of velar rigidity from scar formation, and a maximum rigidity at the posterior border of the hard palate to permit better function of its attached muscles.

COMPARISON OF THE MUCOPERIOSTEAL OPERATION WITH THE BONE FLAP OPERATION

The essential features of each are placed opposite the other, to emphasize the differences that are vital from an operative point of view:

Mucoperiosteal	Bone Flap
1. The blood supply of the flaps when stripped from the bone surfaces of the palate is confined to the vessels coming through the incisive foramina anteriorly and the greater and lesser palatine foramina at the posterior border of the hard palate. All the intranasal vessels as they come from the nasal septum and the walls of the nares are severed in order to permit the flaps to be brought together at and beyond the posterior border of the hard palate.	1. Separation of the palatal bone segments at each side of the fissure does not narrow or contract the nares and dental arches but does permit the sides of the fissure throughout the entire length of the velum and the posterior part of the hard palate to be brought into close contact without interference with the nasal blood supply. There is, therefore, a free circulation from the divisions of the internal maxillary which supply both lateral and septal surfaces of the nose, and anastomose in the incisive canal with the palatinus major as it comes along the hard palate from the greater palatine foramen at the posterior portion of the hard palate. Branches that pass through the lesser palatine foramina to supply the soft palate are also comparatively little disturbed.
2. The fibrous band and attachments of the muscles of the soft palate at the posterior border of the hard palate must be severed to overcome tension.	2. With the bone division on each side extended through the posterior border of the palate bones and the separated bone fragments included in the flaps as they are forced together, no severing of the muscles attached to the hard palate border is required.
3. There is inevitably more or less postoperative stiffening and scar contraction of the velum when its palatal muscle attachments are cut, which tends to shorten the soft palate and also to interfere with speech function by preventing its physiologic activity through loss of flexibility.	3. There is no perceptible velar shortening or loss of flexibility, because no muscles of the velum are cut across. Therefore, the postoperative result gives a longer, more flexible soft palate and the function of speech mechanism may be expected to be more nearly normal.
4. No matter what form of tension suture reinforcement may be applied in the mucoperiosteal forms of operation, whether rubber tubing, metal plates, buttons or quilted sutures, the fact remains that these are in the last analysis dependent for their effectiveness on the soft tissue of the flaps, and this with a much impaired circulation.	4. The principal tension suture of double silkworm gut is looped around the bone segments on each side so that no metal or other reinforcement is required, and the unimpaired blood supply from both nasal and palatal vessels is abundant.
5. Much skill is required in the use of smooth surfaced instruments formed to meet the exigencies of variously shaped palates and the different angles of the sloping sides of the fissures in order to raise mucoperiosteal palatal flaps without injurious traumatism and to suture them without tension. When the blood supply is deficient, the flap tissue is ill nourished, and with the sutures unsupported by bone, defects along the central line of coaptation are always more or less a menace and sometimes unavoidable.	5. When the bone segments of the palate fissure walls are freed, brought together and held by the loop suture, only freshening of the soft tissue at the fissure borders is required and the suturing is much less uncertain than with unsupported mucoperiosteal flaps alone. Defective results through failure of the flaps to nourish, or through the tearing out of sutures by tension, are more unlikely to occur with an undiminished vascular supply, and the security of the approximated bone segments when held in fixation by a properly adjusted suture can hardly be overestimated. The operation is, therefore, simpler and more dependable because of these advantages.

Fig. 6.—A child who suffered in early infancy several attempts to close the palate unsuccessfully. The labial and nasal deformities and facial maldevelopment are typical of cases in which operation is performed by forcible compression of the maxillary structures. The finished picture of this child was taken after several corrective operations had been done to both palate and lip. Her speech, which was very imperfect, improved after the palate fissure was closed, so that she was able to take a prize for declamation at school.

DESCRIPTION OF THE BONE FLAP OPERATION

It is necessary to distinguish the complete from the incomplete palate fissures because the bone flap is not favorable for the closure of fissures of the velum in which the bone is not involved and in such cases the von Langenbeck-Warren types of procedure are indicated.

Incisions are made on both sides of the palate in an anteroposterior direction along the line of and just inside the alveolar ridge in edentulous infant cases, and,

if teeth have been erupted, just sufficiently away from the linguogingival border to prevent injury to tooth roots. A chisel is forced directly through the external hard surface of the fragmentary palatal bone structures into the cancellous structure and then inclined toward the palatal fissure border.

It is occasionally necessary to direct the chisel backward also in order to cut through the palate bones.

Fig. 7.—At left, a young child that had practically the same treatment in early infancy as that illustrated in figure 6, showing the beginning of the same ill effects. At right, same child after correction of the lip and partial correction of the palate after at least two operations had been performed that would otherwise have been unnecessary.

Usually a temporary sponge packing is required on each side while the incision is made on the opposite side. The packing can then be removed from side to side as indicated and the work continued without disadvantageous hemorrhage.

Pressure inward and slightly upward causes the necessary fracture and permits both sides of the palate fissure border to be brought into immediate contact at a

Fig. 8.—Progressive ill effect in later life of wrong early treatment and the improvement that even at this age may be accomplished by operative treatment.

point between and slightly anterior to what in normal cases would be the outline of the posterior border of the palate bones and also throughout the extent of the soft palate.

A stiff trochar, pointed, curved needle or a special staphylorrhaphy needle, which I frequently use, carrying two strands of silkworm gut, may then be passed into the incision on each side of the palate, through at the point of fracture of the bones into the fissure and out through the similar bone separation on the opposite side. The double silkworm gut then encloses the bone fragments with the otherwise undisturbed overlying, underlying and surrounding tissue, and when tied in the center holds the parts so firmly that without fear of tension the palate may be completely sutured from the tip of the uvula up beyond the posterior part of the hard palate and sometimes quite through its central portion.

My preference is to use no. 2 pyoktanin catgut with horsehair coaptation sutures. Gauze strips with tape attached are then packed firmly into the openings on each side where the incisions have been made, and the bones moved toward the central line. This is sealed with collodion and the tapes attached to the cheeks on each side with adhesive tape to give additional security and facilitate their removal. Five days later the packs are removed unless there should be some contraindication to remaining so long, and this very seldom occurs. Before the final packs are placed at the conclusion of

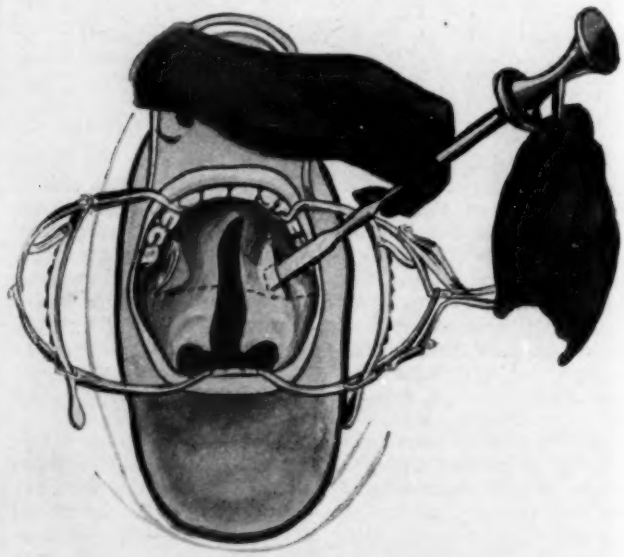

Fig. 9.—First step in the new bone flap operation: Chisel is shown as used in separating the bone fragments and the packing inserted to control hemorrhage on the opposite side as described in the text.

the operation, one or two catheters are passed through the nose to prevent blocking of the nasal passages by the pressure of the packing.

Sometimes the catheters are allowed to remain until the packings are removed, or they may be taken out after having served their purpose in preventing nasal blocking with the packing. Occasionally there is difficulty in passing them because of nasal obstruction and therefore they are not used; but it is preferable to have them placed, if practicable.

IMMEDIATE OPERATIVE RESULTS AND POST-OPERATIVE EXPECTATIONS

With the velum and the posterior part of the hard palate closed, the activity of the palatal and pharyngeal muscles behind becomes a continuous corrective factor, and the additional assistance in the front part of the mouth of the lip muscles which have already reduced the fissure at the anterior portion of the mouth in the region of the alveolar ridge is also continued; therefore, as time passes, there is a continued tendency, now doubly exerted, toward reduction of the remaining por-

tion of the palate fissure which has not previously been closed.

The result of these combined influences is that not infrequently the sides of the remaining unclosed portion of the fissure are brought directly in apposition, and although the tissue has not been cut to give raw surfaces and sutured to make the closure complete, the contact is so perfect that the second step operation seems to be unnecessary. Even when the results of the first step are not so complete, the closure of the remaining portion of the fissure usually becomes so simplified that it offers no such operative problems as those which so often follow when similar cases have been treated by the mucoperiosteal flap operation.

The transference of bone toward the center of the palate is particularly important from the point of view of offering a better corrective activity in the function of the muscles attached to it.

As no incisions have been made in the soft palate and since there has been no separation of the muscular

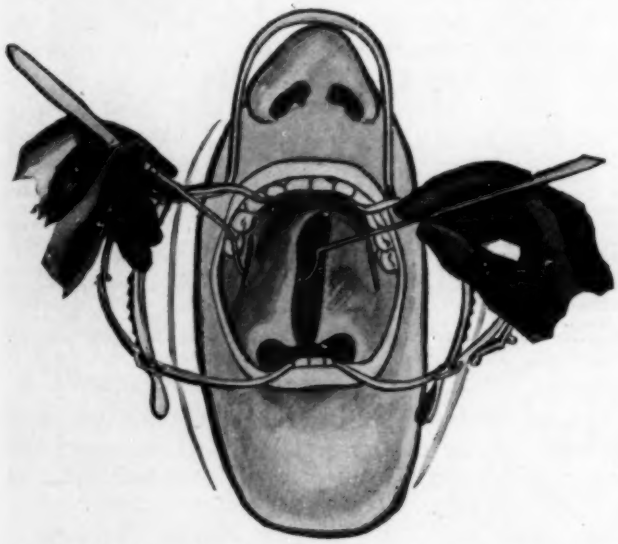

Fig. 10.—Passing the silkworm suture through the opening and around the separated bone and overlying tissue, to be again passed in the same way to enclose the bone flap on the opposite side.

attachments to the bones at the border of the hard palate, the tissue is correspondingly free from a tendency to shorten by scar contraction or to stiffen and lose freedom of action from the same cause.

The second step may be done according to any of the recognized methods of the mucoperiosteal flap operation, but my own preference is the von Langenbeck plan, with suitable modifications.

OPERATIVE DISADVANTAGES

The difficulties that have been encountered in the course of the development of the bone flap method are as follows:

In young infants' cases when first I began to perform this operation, it sometimes appeared that there was more shock from dividing the bone than might have occurred had the mucoperiosteal operation been performed; but as the technic of the procedure was improved so that the bone surfaces were more easily divided, this difference, if any, seemed to be negligible.

On several occasions it has been found to be advisable to pack the wounds on each side after the accomplishment of the bone flap separation because of the free hemorrhage from the posterior palatal vessels, and to complete the operation a few days later. This can be done with safety and without appreciable disadvantage, but is very rarely necessary.

The complete blocking of the nasal passages by the packing inserted to control hemorrhage and to assist in holding the parts in contact has occasionally appeared

Fig. 11.—The first step operation completed, showing the silkworm-gut suture tied and parts drawn in contact, the packing on each side inserted and the velum closed. Usually it is possible to close quite a little farther forward than is shown in the illustration.

to be responsible for high temperatures through reducing oxygenation, and in these cases the packs were removed to give relief.

For this reason the plan of placing a catheter or catheters through the nose before inserting the final gauze packing was adopted to overcome this difficulty.

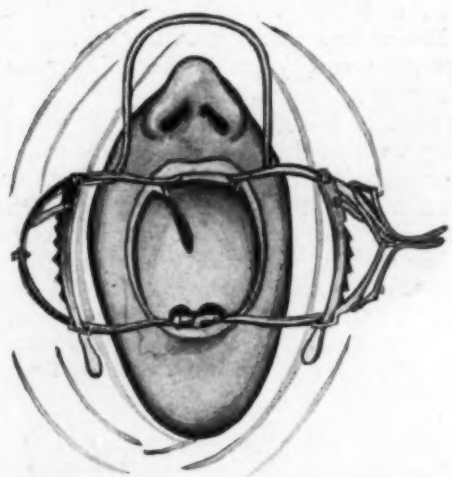

Fig. 12.—Appearance of a mouth after the first step bone flap operation as described. The unclosed opening is frequently much narrower than that shown in the illustration and occasionally wider, but almost invariably within satisfactory surgical limits.

It was found necessary to be careful not to lacerate the nasal mucous membrane and to force pieces of bone through into the open fissure, because the complete success of the operation is largely dependent on the fixation and resistance of the bone segments.

SUMMARY

This method commends itself because unrestricted blood supply gives less danger of loss of tissue and consequent imperfect result.

The palate closure is completed at approximately 1½ to 2 years of age before speech habits have become fixed.

It secures as nearly as practicable a full length, unstiffened velum and a posterior border of the palatal bones that is favorable to natural physiologic function of the attached muscles.

No serious injury is done to the alveolar outline, the premaxilla or the erupting teeth contained therein. Therefore the nares have not been unduly contracted, and, respiratory activity being unhampered, its influence will lend assistance to growth that will improve the nasal outline.

The supporting bone framework not having been compressed or otherwise disturbed, its continued development will tend to give an improved outline to the lip, especially when the teeth are erupted in nearly, or quite, natural positions.

Finally, the activity of both the posterior palatal and pharyngeal muscles cooperating with labial and facial muscles will assist development that must favor improving progress toward more symmetrical facial and labial outlines, and all of the foregoing advantages naturally lend themselves to the acquirement of better speech.

445 Milwaukee Street.

USE OF A SEPTAL FLAP IN CLOSURE OF UNILATERAL CLEFTS OF THE PALATE*

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One of the simplest and most rational classifications of congenital clefts of the lip and palate was suggested by Ritchie and Staige Davis in 1922. Taking the alveolar border as a fixed point, they divide the clefts into three groups: (1) prealveolar; (2) postalveolar, and (3) alveolar.

Every cleft of the alveolar border is placed in the third group, whether the lip in front or the palate behind is open or closed. It is divided into three varieties: (1) the unilateral, in which the cleft lies between the premaxilla and the maxilla of one or other side; (2) the bilateral, in which clefts are present on each side between the contiguous margins of the premaxilla and maxillae, and (3) the median, in which, owing to faulty development or absence of the premaxilla, the cleft lies between the anterior ends of the maxillae.

It is my intention to base the description of the septal operation on the anatomic conditions found in the first of these varieties, viz., the unilateral, and to confine it to clefts implicating the lip, the alveolar border and the whole length of the palate, a type which I have been in the habit of calling a complete unilateral cleft of the lip and palate.

In order to avoid unnecessary detail, I shall omit the description of the features of the lip and nostril.

By referring to the figures and the photographs we can study in detail the margins of the cleft, its shape and width, and the appearance of the buccal surfaces of the palatal plates and the alveolar ridges.

The part of the upper jaw on the septal side of the cleft consists of premaxilla, maxilla, palate bone and septum. I shall speak of it as the "larger process." That on the opposite side of the cleft, the "smaller process," is formed by the maxilla and palate bone only.

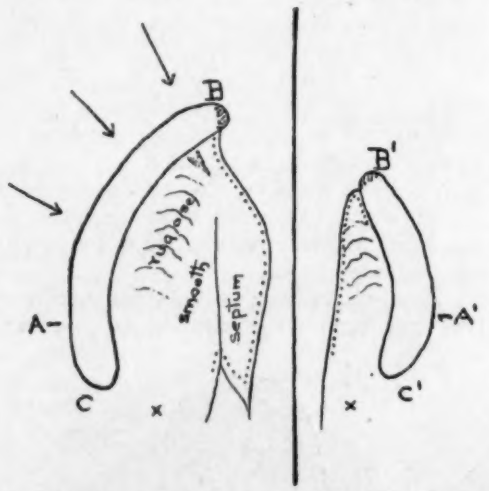

Fig. 1.—Idealized sketch of a plaster mold of a left complete unilateral cleft. The vertical line is in the position of the cleft between the maxillary processes, which have been moved laterally from one another in the figure to bring each side into relief. *A* and *A'* are on the most prominent part of the lateral curve of the alveolar border. *B* and *B'* are on the anterior ends of the alveolar processes, which have been shaded to show the areas of denudation. *C* and *C'* are on the maxillary tuberosities. The crosses, medial and posterior to the tuberosities, are over the hamular processes of the pterygoids. The dotted lines represent the incisions used in raising the palatal flaps. They are only approximately correct. On the palatal surface of the larger process, the rugose and smooth areas of mucous membrane are depicted. The arrows show the direction in which force is applied when molding the bones together.

THE LARGER PROCESS

The Septum.—The side of the septum that is exposed to view consists of two separate parts, an upper and lower, which are often separated from each other by a horizontal ridge. The upper hangs vertically in the nasal cavity and is more or less hidden from view in the greater part of its extent by the palatal plate of the "smaller process," the free edge of which almost touches it. In front, a large area of this surface can be seen through the flaring nostril. The lower part does not hang vertically but is bent into a more or less horizontal position, and slants gradually toward the edge of the palatal plate of the "greater process," with which it fuses. In some cases the bend is so abrupt that the two parts of the septum lie almost at right angles to each other. The ridge is then very prominent and forms one of the margins of the fissure, to be described later as "the false cleft," which lies between the greater and lesser maxillary processes and which leads from the buccal into the nasal cavity on the side of the lesser process. The horizontal part of the septum, in such cases of extreme bending, lies almost on the same plane as the surface of the true palate with which it fuses. The line of union of the septum and palate is usually indicated by a slight ridge. It can also be distinguished by a change in the appearance of the mucous membrane, that on the septum being smooth, velvety and elastic, and of a deep red, while the palatal mucous membrane is dense and tough and somewhat paler. The septal mucous membrane is very loosely attached to the underlying perichondrium, from which it can be peeled with great ease in any direction,

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leaving the perichondrium still attached to the cartilaginous surface. The mucous membrane of the palate, on the contrary, is so closely incorporated with the periosteum covering the palatal plate that flaps lifted up from the hard palate always consist of mucous membrane and periosteum, leaving the underlying bone bare of covering.

The true hard palate lies lateral to the septum. It is bounded in front and laterally by a semicircular mound called the "alveolar process." Its shape is roughly that of a sector of a circle, the circumference being represented by the alveolar border. Posteriorly, it is continuous anatomically with the soft palate or velum. Its surface is covered with dense mucous membrane closely incorporated with the periosteum covering the underlying bone. The mucous membrane is of two types, one smooth and the other rugose. The smooth area forms a broad strip, which occupies the median part of the palate along the margin of the cleft. It reaches from the posterior margin of the premaxilla in front to the velum behind; the rugose forms a narrow strip, which lies along the alveolar border outside the former. The rugae do not usually reach farther back than the middle of the alveolar border. The mucous membrane covering the premaxilla is of the rugose type. The posterior portion of the hard palate is covered with smooth mucous membrane, which is continuous with that on the buccal surface of the velum. The hard palate ceases at the posterior edge of the palate bone.

The alveolar ridge or border projects from the buccal surface like a mound. It surrounds the front and lateral margin of the hard palate. It consists of bone, in which lie developing tooth follicles. It is covered by firmly adherent, dense elastic smooth mucous membrane. The anterior part of the ridge belongs to the premaxilla, the rest to the maxilla. Its anterior extremity projects in front of the anterior end of the cleft.

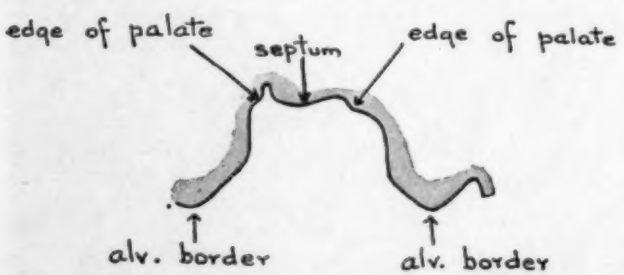

Fig. 2.—Coronal section across a plaster mold of a palate affected with a unilateral cleft. The true cleft is the distance between the edges of the opposed palatal plates; that is, between the points of the arrows. The false cleft is the fissure shown between the bend on the septum and the edge of the palatine plate on the left of the figure. The horizontal position of the exposed part of the septum should be noted; also that the palatine plate of the greater process (right) is more horizontally placed than that of the opposite side (left).

THE SMALLER PROCESS

The smaller process is much smaller than its fellow of the opposite side, because only the maxilla and palate bone enter into its formation. The absence of the premaxilla accounts for the shortness of its alveolar ridge and the smaller palatal surface. In other respects, the general features are identical with those of the larger process. The median edge of the palatal process is free, owing to its failure to unite with the septum. It forms one margin of the true cleft.

If the two palatal surfaces are compared with each other, it is noticeable that, not only are they different in size, but they have a different slant, the larger lying more or less horizontal while the smaller is nearly vertical. The smaller palatal plate frequently slants upward so precipitously that its median edge lies opposite the ridge on the side of the septum that marks the boundary between its horizontal and vertical parts. The two structures are, however, always separated by a fissure connecting the mouth and nose. This fissure may be called the "false cleft" to distinguish it from the "true cleft," which is the space between the edges of the opposite palatal plates.

In cases in which the maxillary processes are separated from each other for a considerable distance and the septum is greatly distorted, at least two thirds of

Fig. 3.—Two pictures of the head of a seven months' fetus in which there was a rightsided complete unilateral cleft of the lip, alveolar margin and palate. The figure on the right shows the external appearance of the cleft in the lip. The left hand figure is an accurate drawing of a coronal section of the head through the anterior part of the palate. It shows the relations of the palatal plates to one another and the exact boundaries of the cleft. The site of fusion of the left palatal plate and septum is indicated by an acute bend. The lower part of the septum is bent like a hockey stick. Both palatal plates have been pushed into a vertical position. The free edge of the right palatal plate (left in the figure and shown by *X*) is considerably higher than that of the left. The alveolar border of each maxillary process lies here outside that of the mandible, whereas under normal conditions the alveolar border of the mandible should lie a little outside that of the maxilla. In the actual specimen the tongue occupied the space between the separated maxillae and its dorsum, triangular in the section, projecting upward between the edge of the left maxillary plate and septum.

the roof of the mouth is formed by the greater process, the buccal surface of which consists of two distinct areas separated by a slight ridge. One lies medial to the ridge and belongs to the septum; the other lies lateral and represents the true hard palate. They are easily distinguished from each other by the character of their mucous membrane. The two surfaces lie in the same plane and form a continuous curve, which runs across the vault from the alveolar border to the fissure leafing into the nasal space which I have previously spoken of as the false cleft. The remaining third of the roof of the mouth is formed by the palatal plate of the lesser process, which often lies in such a vertical position that its buccal surface faces the median line (figs. 2 and 3).

The Cleft.—The true cleft is the space between the anterior ends of the alveolar borders, in front, and the medial edges of both palatal plates and the vela behind this point. It must be carefully distinguished from the fissure, or false cleft, which separates the side of the septum from the median edge of the smaller palatine plate. The structure of the roof of the mouth is particularly well illustrated in the coronal section of the head of a fetus (fig. 3) and that of a plaster cast of an actual patient (fig. 2).

It must be remembered that the foregoing description refers only to cases of unilateral cleft in which the maxillary processes have been pushed apart for a considerable distance and the septum forms part of the roof of the mouth. Milder degrees of deformity, in which the separation of the maxillae is slight, have not been considered because they are not suitable for repair by the use of a septal flap.

The degree of displacement of the maxillae can be measured by comparing the curve of their alveolar mar-

gins with that of the mandible, which may be taken as normal. If tracings of the alveolar curves of maxillae and mandible are superimposed, a graphic demonstration of the degree of distortion is obtained. Such a tracing is shown in figure 4. The following points can then be verified: The posterior ends of the alveolar processes of the mandible nearly coincide with those of the maxillae, showing that the latter (maxillary tuberosities) have not been much disturbed by the pressure of the tongue. In front of the tuberosities, the alveolar margin of the maxilla lies outside that of the mandible, and the divergence of the curves increases until we reach the tips of the alveolar processes. There is, however, a difference between the two sides. On the side of the greater process the divergence is so great that the tip of the alveolar process lies far in front of the mandible; whereas on the side of the lesser process it usually lies along its anterior border. The greater process is always more distorted than the lesser because it stands directly in the way of the tongue as it is protruded from the mouth.

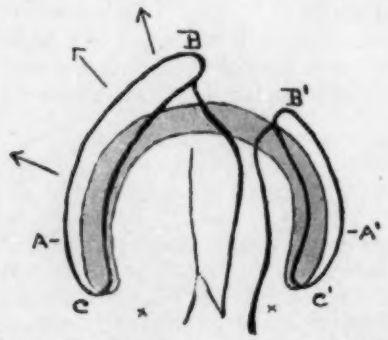

Fig. 4.—Left complete unilateral cleft, showing the separation of the maxillary processes. The horseshoe mandibular curve (shaded) has been superimposed on the maxillae to indicate the degree of the deformity. *C* and *C'* show the maxillary tuberosities; *A* and *A'* represent the most prominent part of the lateral curve; *B* and *B'* are on the anterior ends of the alveolar processes. The crosses behind and medial to the tuberosities show the positions of the hamular processes of the pterygoids. The arrows show the direction of the tongue thrust.

By comparing measurements taken across the palate between corresponding points on the alveolar borders of the maxillae with similar measurements taken across the curve of the mandible, we can measure the extent of the deformity exactly. Three points are taken on each maxilla, at the tuberosities *C C'*, at the most prominent part of the lateral curve of the alveolar border *A A'*, and at the tips of the alveolar processes *B B'*. When they are compared with the mandibular measurements, we usually find the following differences: Between *C* and *C'* the maxillary measurement is seldom more than 1 mm. greater than the mandibular; between *A* and *A'* the difference may be as much as 2 or 3 mm., whereas the points *B* and *B'*, which under normal conditions ought to be in contact with each other, may lie as much as from 10 to 15 mm. apart.

Table of Alternatives

Operation	First Alternative	Second Alternative	Third Alternative	Fourth Alternative
First...	Lip and alveolar border	Lip, alveolar border and anterior part of palate	Alveolar border and anterior part of palate	Alveolar border
Second.	Palate, complete at one sitting (rare) or anterior part only	Palate, posterior part	Lip	Lip
Third..	Palate, posterior part	.....	Palate, posterior part	Palate, complete at one sitting (rare) or anterior part only
Fourth	.....	.....	.....	Palate, posterior part

In plastic work on the lip and palate, one cannot emphasize too strongly the wisdom of operating in stages. In a former paper I presented a table in which an attempt was made to standardize the sequence and character of the successive operations required to close lip and palatal defects. I have found it so valuable that I venture to present it again for consideration.

The table is easy to read, and if one believes, as I do, that the deformity of the alveolar border should be repaired early in life, it can be applied to almost all the typical examples of complete unilateral and bilateral clefts of the lip and palate. To understand the method of applying the table, let us take as an example a typical case of complete unilateral cleft of the lip and palate with a reasonably wide cleft. If we choose the sequence of operations outlined under the first alternative, three operations will probably be needed to close the defect. At the first operation, the alveolar border is restored and the lip repaired; at the second operation, the anterior part of the palate, and at the third, the posterior part of the palate. The other alternatives are read in the same manner; to wit: in the second, two operations; in the third, three, and in the fourth, four. The first three alternatives are particularly applicable to complete unilateral clefts, whereas complete bilateral clefts usually fall into the fourth. Considerable latitude can be taken with the first alternative. Thus, at the first operation the lip alone can be repaired, and if sufficient time is allowed to elapse between the first and second operations, the anterior ends of the alveolar ridges will come together spontaneously and the cleft will be narrowed considerably. By this means we avoid molding and penetration of the jaw with the silver wire suture and so avoid the risks of injuring the tooth follicles. The subsequent operations follow according to the table. The second alternative is somewhat risky. It should never be attempted unless the child is in splendid physical condition. The first operation of the sequence is very extensive and is usually followed by severe shock. The third alternative is, in my opinion, the operation of choice in all the cases of complete unilateral cleft in which the septal flap is used.

Fig. 5.—Plaster cast of palate of a case of right complete unilateral cleft. On the larger maxillary process (right) the premaxilla stands out prominently in front. To the mesial edge of this process the septum is attached. Its lower portion is almost horizontal and lies in the same plane as the hard palate, with which it blends. The line of the incision on the septum is shown by the broken line. In front it extends well under cover of the free end of the alveolar border (shown dark in the photograph) to reach the front of the hard palate. The short isolated dotted line in the groove between the alveolar border and the rugose part of the hard palate represents a short incision (Langenbeck) used to aid in elevating the mucoperiosteal layer. I seldom use such an incision now. The smaller maxillary process (left) is not in good focus.

STEPS AND TECHNIC OF THE OPERATION

The object of the operation is to restore the curve of the alveolar border and to close the anterior part of the palate by means of a flap taken from the side of the septum. If the operation is successful, we secure union of the anterior ends of the alveolar processes and a third or a half of the front of the palate.

First Stage: Preparation of Septal and Palatal Flaps.—An incision, the outline of which is shown in figure 5, is made on the side of the septum. It courses horizontally from front to back along the ridge that separates the vertical and horizontal parts of the septum from each other. The anterior end of the incision is carried forward into the nasal hollow which overhangs the premaxilla, and then curves sharply round toward the anterior end of the groove that separates the alveolar ridge of the premaxilla from its palatal surface. It stops at this point. The posterior end of the incision is carried backward until it reaches the posterior border of the septum, which it follows medially to its junction with the hard palate. The incision outlines a flap on the septum whose free edge is considerably larger than its base. The base is formed by the junction of the septum and the mucoperiosteal layer of the hard palate where the two structures are anatomically continuous. Its shape is roughly that of a mushroom (button) with sharply cut corners. The flap, which consists of mucous membrane only, is now peeled from the septum with a periosteal elevator and reflected toward its base. It is handled very carefully and retracted by means of two fine silk threads passed through its corners. It peels up with great ease as far as its base, where it blends with the hard palate. Along this line a curved elevator is passed under the mucoperiosteal layer of the hard palate. It is then quite easy to peel up the mucous membrane of the hard palate from front to back and outward as far as the alveolar border. Behind, where the velum and hard palate blend, it is very difficult to raise the flap from the underlying bone, because the palatal aponeurosis (the tendon of insertion of the tensor veli palatini) is firmly attached to the posterior edge of the palate bone. If a periosteal elevator is used in this situation, there is great danger of tearing the flap. It is better to sever the attachments in the following manner: A traction suture of fine silk is passed through the velum, the traction stitch is pulled on, and a slight area of the cranial surface of the velum is exposed and the attachments of the velum to the posterior edge of the bone are severed by successive snips of curved scissors or by short cuts made with the edge of a curved Lane's knife. The structures divided are nasal mucous membrane and palatal aponeurosis. As soon as this stage is reached, the whole palate, with the septal flap attached to it, hangs free on its lateral and posterior attachments. The outline of the denuded area is shown clearly in figure 6.

Fig. 6.—The same palate as that shown in figure 5. The extent of the flap lifted up from the septum and hard palate is indicated by the dotted area on the right. On the left a similar dotted area shows the extent of flap lifted up on this side. The whole palatal plate on each side is denuded of its mucoperiosteal covering. An oval shaded area is seen on the tip of each alveolar process. These areas are denuded of their mucous membrane and are brought in contact with each other when the maxillae are approximated.

We now turn our attention to the palatal surface of the smaller maxillary process on the other side of the cleft. The periosteal elevator is inserted at the free edge of the cleft between the bony palatal plate and its mucoperiosteal covering, and a flap of mucoperiosteum is elevated from the underlying bone over its whole area. The extreme anterior end of the flap is thrown up as a small tongue by carrying an incision backward for a short distance along the groove separating it from the alveolar border (figs. 6 and 7). It is also handled by traction sutures passed through its free edges. Care must be taken to liberate it freely in order that its raw surface may be brought in contact with that of the septal flap without distortion or tension. To this end it may be necessary to divide on this side also the palatal aponeurosis and nasal mucous membrane from the posterior edge of the palate bone. When this is done, the whole palate will hang freely on its lateral and posterior attachments. This completes the first stage.

The flaps are now ready for approximation. Certain preliminary steps are necessary, however, before the sutures are inserted.

Molding the Maxillae.—The maxillae are usually so far apart that it is seldom possible to bring the flaps together without tension; therefore it is necessary to push the bones together and mold them into shape. If thumb pressure alone is used, the force is directed at first against the front of the larger process at a point lateral to the premaxilla, in order to drive the maxilla bodily toward the middle line and narrow the cleft. Pressure on the premaxilla must be carefully avoided until the main part of the greater process yields and slides toward the opposite side. Pressure is exerted on the outside of the cheek above the line of the alveolar border, in order to avoid bruising or breaking this delicate process in which the tooth elements are embedded. With perseverance and patience, the bone moves over gradually into the desired position. No attempt is made to disturb the posterior connections of the bone, because, as we have previously pointed out, the distance between the tuberosities of the maxillae is seldom increased more than 1 mm. Pressure is kept up until almost all the natural resilience of the bone is destroyed and there is no longer a tendency for it to spring back into its former position. During this manipulation, no attempt is made to alter the position of the lesser process. It is merely steadied by the thumb of the opposite hand. If the molding is successful, the premaxilla will occupy the front of the curve of the restored alveolar border, and the tips of the alveolar processes will touch one another. The natural forward projection of the premaxilla must be preserved. If it is pushed too far backward, a flat upper lip will result. The areas of contact on the tips of the alveolar processes are now denuded of mucous membrane in order that they may unite when they are brought together.

Fig. 7.—Plaster cast of a left unilateral cleft which was sawed into two parts along the line of the cleft. Each half was then tilted so as to bring its mesial surface into view, and photographed. The pictures are applied side by side as they would be normally except that they are tilted and separated. The anterior ends of the alveolar borders are uppermost. On the left the septal flap is clearly outlined, and the mucous surface of the hard palate with which it fuses. The ring shaded by dark lines shows the area of denudation on the front of the alveolar border. On the right, the smaller maxillary process is shown. The mucous membrane of the hard palate is very sharply defined. The line of incision (tongue shaped) runs along the free edge of the cleft and circles round between palate and alveolar border in front.

Suturing the Maxillae.—A suture is now passed through the maxillary processes in order to hold them together. The bones are penetrated at a considerable distance above the alveolar margins in order to avoid injury to the tooth sacs. The wire passes in front of the premaxilla without penetrating it, and traverses each maxilla at the same point; that is, about the level of the second premolar. The front part of the wire is completely buried under in the soft tissues of the lip and cheek, except where it lies in the cleft below the nostril. The loop lies in the nasal space. The slack of the wire is taken up, but no attempt is made to tighten it at this stage. The ends are left long and anchored.

Approximation and Suture of the Palatal Flaps.—At this stage, the sutures should be passed through the palatal flaps. The anterior end of the septal flap is approximated to the anterior end of the palatal flap on the opposite side of the cleft, and the edges of the two flaps are applied to each other. It is seldom that more than four stitches are needed. As a rule I use only three. All are of the mattress type, and they are inserted in such a manner that broad strips of the raw faces of each flap will lie in contact when the stitches are tightened. The sutures are shown in figures 8 and 9. Fine silkworm gut is used as suture material. The sutures are passed and anchored in position, but not tied at this stage.

Approximation and Fixation of the Maxillae.—The maxillae are now pushed firmly in contact with one another until the raw areas on the tips of the alveolar margins are in contact. The slack of the silver wire suture is then taken up and the free ends are twisted firmly together.

Tying of the Sutures in the Palatal Flaps.—The sutures are now tied, beginning behind and finishing in front. The mattress stitches must not be fastened too tight. When all the stitches are tied, the line of suture resembles that of the flanges of a steam pipe (fig. 9).

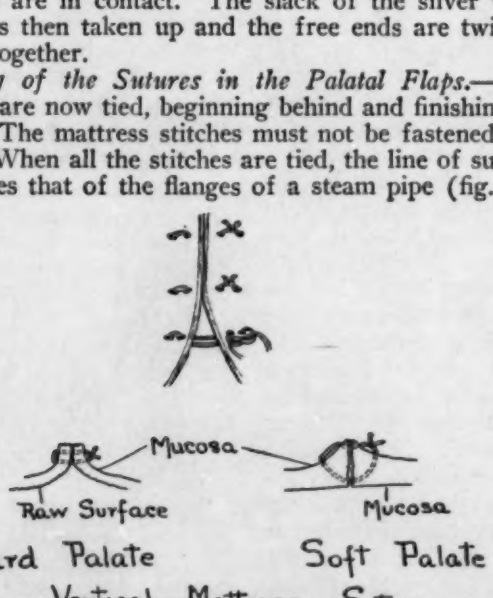

Fig. 8.—Method of passing the vertical mattress sutures. In the upper figure the two upper stitches are tied very loosely; the lower one is not tied. It is clear that stitches passed in this manner cannot strangulate the blood supply to the edges of the flaps. In the lower figures, we see cross-sections of the stitches tied tight. On the left, the raw surfaces of the hard palate are seen to be held firmly together over a large area, and the edges turned out like the flanges of a steam pipe. On the right, the stitch is shown passing through mucosa on buccal surface of palate, but not penetrating mucosa on cranial surface. This technic is of the greatest value.

Finally the sutures are cut short. The silver wire suture projecting from the nostril is now cut distal to the twisted knot, the ends being left about a fourth of an inch long. This completes the operation.

AFTER-TREATMENT

The after-treatment is very simple. The flaps are never touched or interfered with in any fashion. Water is given immediately, and milk feeding allowed the same day. The silver wire suture through the maxillae is removed in three or four weeks. The sutures in the palate usually come away spontaneously. If necessary, I remove them in four or five weeks.

In figures 10 and 11 the plaster casts show the palate before the closure of the cleft by the septal flap and the result of the operation at a subsequent period.

The immediate results obtained by the operation have been very satisfactory. If the babies are well nourished, shock is seldom seen.

My experience in the use of the septal flap, deliberately as an integral step of the operation, does not date further back than six years at the utmost. Previous to this time I had performed the operation occasionally in a somewhat timid fashion, as a help when closing the front of the cleft in cases in which the lip alone had been repaired at a former operation, but no attempt had been made to bring the maxillae together. In such cases the cleft was so wide in front that closure by a true palatal flap was invariably followed by the persistence of a hole just behind the alveolar border.

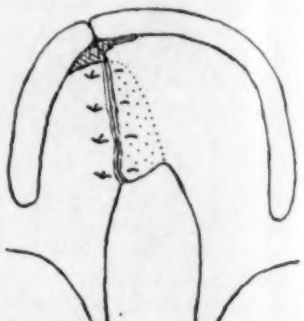

Fig. 9.—Appearance of the palate when the maxillae are approximated and the flaps fastened together. The tips of the alveolar processes are in contact. Behind them a shaded area is shown which designates the denuded bony surface of the premaxilla and of the lesser palatal process. The line of fusion of the septal flap with the mucoperiosteal flap of the greater process (right) is shown by a dotted line. The vertical mattress stitches are inserted and knotted but not tied tightly. Consequently the flanging of the area of apposition of the flap is not shown. No attempt has been made to obtain perspective, and therefore the septal flap appears much narrower in front than it is in reality.

The great objection to this method of operating lies in the risk of injury to bone and especially to the tooth follicles during the passage of the silver wire suture. I try to avoid the tooth follicles by drilling the maxillae far away from the alveolar margin, but they are placed so high in the alveolar processes under normal conditions than they are injured occasionally in spite of all care.

I have always believed that patients whose palates have been repaired before they learn to talk speak better than those who have learned to talk before the repair. I feel certain that the patients whose palates have been repaired at the age of a year, or even as late as 18 months, speak much better than those patients in whom I have repaired the palate at the age of 5 years or later; and consequently I have been encouraged to persist in my method. I feel that the advantages of the early operation outweigh its disadvantages, and that my results so far are much superior to those obtained hitherto. If I felt otherwise, there would be no justification for my teaching except the sentimental desire to efface the repulsive deformity and make the unfortunate children presentable as early as possible.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BROWN AND THOMPSON

DR. VILRAY P. BLAIR, St. Louis: In the treatment of complete clefts of the lip and palate, it is good surgical practice to make the closure at several consecutive steps. Even to approximate the ideal in this work requires the highest order of surgical skill, and because repetition is essential to the

acquisition of skill, most men of experience will sooner or later adapt for general use some one of the several accepted general plans of treating these clefts. Having given skill all due credit, it must on the other hand be granted that, given equal skill, the best plan will give the best results. It is only by comparing results that we can determine which is the better plan, but to be worth while this comparison must include also the surgeon's skill. The plan that is the oldest and is today the most universally employed consists in simply repairing the cleft lip over the open alveolar cleft, transfixing the maxillae with wires by which the bones are immediately and forcefully approximated. There is a strong appeal in this operation and I used it for a long time, but gave it up a number of years ago, not for the objections ordinarily advanced. The developing teeth may be injured, but to my mind the insuperable objection is that in certain cases this operation has been followed by a most distressing lack of forward progression of the maxillae, which, when present by the age of 12 or 14, may be pronounced. Further study has convinced me that almost any attack on the body of the bone or the alveolar process is objectionable and unnecessary. Brophy attacked the problem more directly by transfixing the maxillary bones with silver wire by which the separated bones were immediately forced together. There is a strong appeal in this procedure, and he has many followers. There are several serious flaws in this plan, the chief of which is that it may be followed by a late and most serious lack of development of the anterior part of the maxilla, and dependent on this, malocclusion of the teeth and flattening of the upper lip and retraction of the nose. It was the observation of this from ten to fourteen years after operation that caused me to abandon the Brophy plan. The simple procedure of pushing back and suturing or wiring the protruding premaxilla is not free from possible ill consequences. The premaxilla belongs in front of and not between the maxillae, and if it is so disposed as to prevent the maxillae from approaching each other anteriorly, this part of the cleft may be difficult to close and the upper incisor teeth and gum occupy a posterior position.

DR. GEORGE MORRIS DORRANCE, Philadelphia: The success or failure of a cleft palate repair is judged by the clearness of speech. I do not operate in the average case for closure before the sixth or eighth year. The ability to speak is controlled by the ability of the patient to shut off the air going through the nose. There are two places where this normally occurs—one just where the soft palate comes in contact with the roof of the nasopharynx immediately back of the eustachian tube or at the anterior nares. Many successes in speech are not due to successful closure of the palate but to the closure of the nares at the level of the compressor narium. In an anatomic study of the roof of the child's mouth, I note that it is essential to free the tensor palati or cut it, if one is to obtain a flexible palate. I now free the hamular process from its attachment to the internal pterygoid plate and by this means free the tensor palati muscle so that, when it contracts, its fibers are almost parallel with the levator palati, by this means relieving the lateral tension on the palate. It is also interesting to note that the superior constrictor is freed from part of its anterior attachment and has a tendency when so relieved to draw the palate backward. There are a number of cases in which to obtain the shut off at the posterior part of the nose I find it to advantage to free the palate, then divide the hamular process, and free the palatine aponeurosis from the horizontal plate of the palate. Then the whole palate drops back about three-fourths inch and tension is relieved. One can now easily suture the flaps together without any tension. This will, of course, when healing is complete, leave an opening in the anterior part of the hard palate. This is closed by a dental obturator. Patients that have been operated on by other methods but whose speech was greatly deficient when operated on by this method have obtained a good speaking voice.

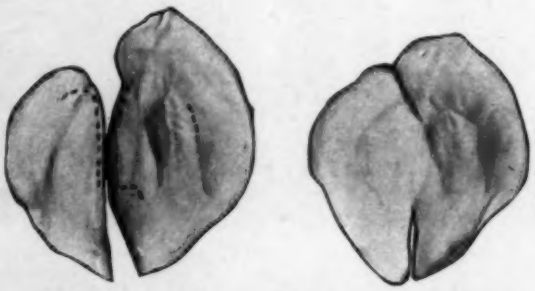

Fig. 10.—Casts of a unilateral cleft of the palate before and after closure by the septal flap. On the left, the picture shows the palate before operation with dotted lines showing the incisions employed to elevate the flaps. On the right we have the result shown three months after the first operation just before the lip was repaired. The alveolar border and a small part of the hard palate behind it had not united, but the fissure was very narrow. The greater part of the hard palate, however, was closed. Posteriorly, the edges of the velum were almost in contact. The excellent position of the premaxilla may be noted.

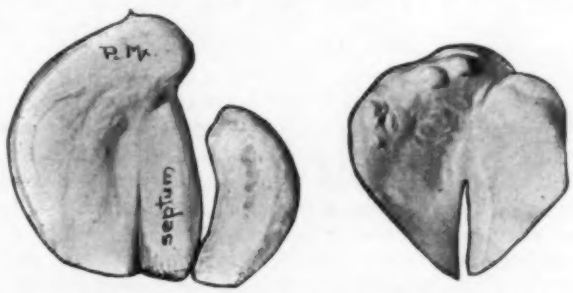

Fig. 11.—Casts of a case of unilateral cleft of the palate before and after closure by the septal flap. On the left, the picture shows the palate before operation. The almost horizontal position of the lower part of the septum may be noted. On the right we see the palate at the age of 14 months just before the operation on the posterior part of the palate. Almost the whole length of the hard palate is closed, and the premaxilla lies in good position.

DR. GORDON B. NEW, Rochester, Minn.: The fact that there are many plans advocated for the closure of cleft palate by equally good men would seem to demonstrate that good results may be accomplished by entirely different procedure. Dr. Thompson's and Dr. Brown's papers both bring out certain advances, but their plans of treatment are quite different, and I have had no experience with either of them. It is only by the presentation of papers such as these that we gain additional knowledge of this subject, so that all of us who are interested in this field may give these children the best possible results. Dr. Brown's idea certainly seems sound and logical. The fact that the muscles of the posterior margin of the soft palate are not cut away should add considerable to the functional result. I should like to ask him, however, about the amount of reaction following the operation he has outlined as compared with the mucoperiosteal flap operation as ordinarily done; also as to whether he has had any serious bone infections from this procedure. It would be interesting to see by the use of the roentgen ray just what happens to the bone following an operation such as his. The use of the septal flap as brought out by Dr. Thompson also has certain advantages in obtaining more tissue to close the anterior part of the palate. I have used it quite frequently as part of the palate flap, but not following the method that Dr. Thompson has outlined. I feel that doing these operations in stages is very essential, and the method that Dr. Thompson advocates is highly commendable. The fact that both these experienced observers feel that the average of good results in speech is much higher than they have been able to obtain by previous measures would seem to recommend a trial of both these plans in certain cases in which they would seem indicated. Only by several men trying out these procedures and then by correlation of the functional results regarding speech, etc., can any uniform plan of procedures in the treatment of cleft palate ultimately be arrived at.

DR. JAMES E. THOMPSON, Galveston, Texas: I cannot help feeling that the restoration of the anatomic deformity is of

the greatest importance. I am afraid Dr. Blair misunderstands me. There is one additional feature with regard to the method of operation that I have described which I feel I did not explain sufficiently, and that is that the bone flap method is not applicable to fissures of the velum that do not extend sufficiently into the hard palate to permit or require the use of bone flaps. In that class of cases the mucoperiosteal operation should be done.

AUSCULTATION AND PERCUSSION IN THE DIAGNOSIS OF ACCESSORY NASAL SINUS DISEASE

PRELIMINARY REPORT *

AUSTIN A. HAYDEN
CHICAGO

Although auscultation and percussion have long been universally recognized by physicians the world over as procedures of great diagnostic value in diseases of the chest and of considerable importance in certain abdominal and brain conditions, no attempt has been made to apply them to the location of accessory nasal sinus disease. This seems even more strange, as many of the pioneer otolaryngologists were outstanding figures in chest work less than a quarter of a century ago.

That sound waves travel more readily through denser mediums is a generally accepted law of physics. The approach of a train can be heard sooner through the rail than through the air. Our tuning fork was heard for twenty-four seconds through an empty gallon keg and thirty-six seconds when filled with water. We could logically expect, then, that the denser sinus would transmit sound more readily. The density could be increased by thickening of the mucosal lining, the result of recent congestion or old and recurrent inflammations, by fluid or new growths, and by a combination of any or all of these factors. Conversely, the less dense sinus should transmit waves less readily, just as the ringing of an alarm clock under a bell jar becomes less and less audible as the air is exhausted. In this respect vacuum sinusitis theoretically should bear the exact opposite relation to the cavity filled with fluid or whose walls are thickened.

Two corollaries seem to follow consistently from the foregoing:

1. Other things being equal and both sinuses normal, the smaller should transmit sound better than the larger, as the impulses travel less distance through a less dense medium (the air of the sinus) and further through a more dense medium (bone, muscle, skin). Conversely, a large sinus with thickened walls, especially when filled with fluid, neoplasms or both, affords a much better pathway for sound transmission than the normal sinus of corresponding size.

2. The resonance of a sinus depends on the ease with which sound waves enter it as a conducting medium and the readiness with which it can establish vibrations of its own. The character of this medium—principally its size and density—determines its efficiency as a sounding board.

Except for determining the duration of the tuning fork vibration, the differential stethescope (fig. 1) is essential for all sinus auscultation because opposite sinuses should be auscultated as nearly simultaneously as possible. By changing the ordinary stethoscope from one side to the other, the pressure against the cheek, as well as the location over the sinus, might vary considerably. Any attempt to eliminate these sources of error would consume so much time that the sound would no longer have the same intensity. The instrument consists of the ordinary binaural stethoscope with two bells hooked up on an easy working two-way switch. The observer listens with both ears but can hear only the sounds that come from the bell toward which the lever points. The opposite side is completely cut off. The examiner places the bells symmetrically over the sinuses to be compared. The patient is instructed to hold them in this position, using equal pressure on each side. For the maxillaries they should be directed slightly upward into the cheek right over the canine fossa from one-fourth to one-half inch to the outer side of the nose. The frontals can be approached best from underneath the eyebrows, with the bells directed upward and somewhat back and inward between the eyeball and the nose. In mastoid auscultation they should rest slightly below the antrum and cover the upper superficial part of the tip. For determining the length of time the vibrations of the fork can be heard through a sinus, the ordinary binaural single bell stethescope is somewhat handier, although the differential can be used with the lever pointed continuously toward the sinus under observation.

Fig. 1.—Differential stethoscope: The ordinary binaural stethoscope can be converted into the differential type by hooking its rubber tubes into a Y which connects below with an inverted Y equipped with a two-way switch, controlled by an easy working noiseless lever cutoff. Each fork of the lower Y carries an 8 inch rubber tube, to the end of which an ordinary stethoscope bell is attached. The observer is thus enabled to hear binaurally the sound of the vibrating tuning fork as transmitted through the sinus toward which the lever points. By turning it quickly from side to side, one can make almost absolutely simultaneous comparisons of the sound intensity coming through the opposite sinuses.

The following sounds were utilized for auscultation through the sinuses: (*a*) conversation; (*b*) breathing; (*c*) humming; (*d*) tuning fork vibration for relative intensity; (*e*) tuning fork vibration for duration.

* Entrance Thesis, accepted by the American Laryngological, Rhinological and Otological Society.

The sound produced by the tuning fork was found to be the most reliable of all. The measurement of the duration of its vibration with the single bell stethoscope gave more accurate results than the comparison of relative intensity with the differential instrument through opposite sinuses, although the latter can be made much more rapidly. Low pitched monotonous

Fig. 2.—The duration of the sound of the tuning fork vibration can be measured better with the ordinary binaural single-bell strethoscope than with the differential instrument. The latter can be used, but is not quite so easy to handle. The stop watch also proved to be a great convenience. In the clinical cases referred to, this test furnished the most uniformly constant and reliable information in sinus auscultation, although it requires a little more time than for comparison of the opposite sinuses with the differential stethoscope.

humming also proved to be a very satisfactory type of noise for comparative calculation. Conversation was less serviceable even though monotonous and of even pitch. Breath sounds were quite reliable and not entirely dependent on the efficiency of the adjacent nostril. In case 2, for example, breathing was heard much more loudly through the left antrum, although the card test (fig. 3) showed that fully twice as much air was passing through the right side of the nose.

The relationship of sinus sound conduction to that of air and bone conduction was determined from observations made on selected persons with normal sinuses. Transillumination in each case was clear and equal. No visible intranasal pathologic condition was present. None gave any history of previous sinus trouble, and each had normal hearing by whisper, watch, Galton whistle and fork tests. Audiometer graphs showed average hearing losses of not more than 5 per cent in any ear and not greater than 10 per cent at any frequency. A ninety second fairly heavy fork was employed of about 200 double vibrations per second. This was held on the head exactly in the sagittal plane just below the hair line for maxillary auscultation. For the frontals and mastoids, the handle of the fork was placed at the intersection of the sagittal plane and one passing through the external auditory canals.

The average for this fork as heard through the antrums by auscultation was thirty seconds. Bone conduction also averaged thirty seconds. The auscultation figures were practically identical through the frontal sinuses, but subject to considerable variation over the mastoids. The vibrations of the fork itself were perceptible to the observer's fingers for sixty seconds. The observer heard the fork with the stethoscope (fig. 2) through the patient's sinuses almost exactly as long as the patient heard it himself by his own bone conduction.

Percussion—a blow on the top of the head (fig. 4) is felt more distinctly in the acutely or subacutely diseased sinus—perhaps in the same way that skulls fracture by contrecoup. Similar observations have been made on recently infected and congested tooth roots, especially in the upper jaw. The force is best exerted by the observer's clinched fist, although a pleximeter may be used.

CLINICAL DATA

Auscultation of W., aged 52, revealed all sounds distinctly louder over the right frontal sinus. The antrums were equal. The fork was heard seventeen seconds through each antrum; thirty seconds through the right frontal sinus and twenty seconds through the left. Breathing was completely blocked on the right side. Roentgen-ray examination revealed large frontal and maxillary sinuses, the latter equally cloudy, while only the right frontal showed occlusion, which seemed to be complete. A modified Killian operation revealed the frontal sinus lining greatly thickened and the cavity filled with pus. A modified Caldwell-Luc operation revealed the right antrum filled with foul smelling pus of the same character. Although the patient never complained of symptoms and the left side

Fig. 3.—The card test affords a simple means of comparing the breathing co-efficient of each side of the nose. It is much handier but somewhat less accurate than either the Gaetzel or Cook diagnostic mirror. Attempted comparisons by digital occlusion of one nostril are obviously always fallacious. These measurements seemed advisable as a restricted air current might be expected to resonate less clearly through contiguous sinuses. Complete obstruction of breathing might obliterate all sinus resonance on the occluded side. The second case reported, however, reversed this supposition.

of the nose contained almost no pus, the left antrum was opened very skeptically and entirely on the auscultation and roentgen-ray observations. It was almost as extensively diseased as the right.

A newspaper reporter, aged 21, presented left inferior turbinate hypertrophy irreducible by cocaine, glycerin or epinephrine applications. The breathing space was found to be occluded about one third by the card test. All sounds were heard louder over the left antrum. Through the right antrum the fork was heard twenty-five seconds; left, thirty-two seconds. The roentgen ray and transillumination showed definite involvement of the left side, which operation confirmed. An interesting thing here was that despite the obstructed breathing on the left side, the breath sounds were much louder over that antrum, evidently coming clear across the nose from the right nostril. Percussion was felt much more distinctly over the sinus involved.

A cadet, aged 18, of a military academy, had a large inferior turbinate irreducible by cocaine, glycerin or epinephrine. The breathing space was open about one half, as shown by the card test (left side). He was seen first about two weeks before operation. The stethoscope gave much louder auscultation on the left side. Transillumination was about equal. Pus was scanty. Roentgen-ray examination indicated definite pathologic changes in the left antrum. The symptoms had abated somewhat when the young man came up for operation, but all were still present. A modified Caldwell-Luc operation showed a polyp half the size of a hazelnut attached high up on the nasal side close to the outlet. Percussion was felt much more distinctly over the sinus involved.

A sister at the home for the aged had a nasal discharge, headache and tenderness of the cheek. Transillumination showed the left side dark. Auscultation was louder on the left. The tuning fork was heard twenty-two seconds through the right antrum and thirty seconds through the left. The card test showed the breathing space about one-fourth occluded. A modified Caldwell-Luc operation showed definite involvement of the left side.

A maid at a working girls' home had headache and tenderness of the cheek. Transillumination showed the right side dark. Auscultation was louder on the right. There was a large right inferior turbinate irreducible by cocaine, glycerin or epinephrine applications. The card test showed the breathing space occluded about one third. A modified Caldwell-Luc operation showed definite involvement of the right side.

Fig. 4.—Percussion: A moderate blow with the clenched fist in this position is felt more distinctly in the diseased sinus or tooth.

CASES IN WHICH OPERATION WAS NOT PERFORMED

Miss W., a graduate nurse, had undergone a modified Caldwell-Luc operation on the right antrum a number of years ago by myself. Following a recent head cold there developed symptoms of nasal discharge, headache and tenderness over the right cheek. All auscultation sounds were louder over that side. Percussion was felt much more distinctly over the sinus involved.

In twenty of twenty-four other patients complaining in general of nasal discharge, headache and tenderness over the cheek or forehead or both, the seat of the trouble was located with the stethoscope, the patient having been previously instructed not to indicate where the trouble was located.

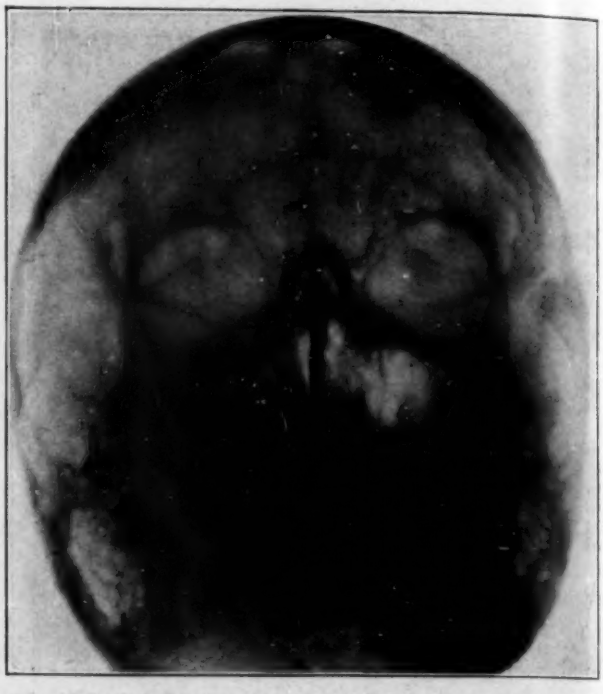

Fig. 5.—Intensity much greater through right antrum; duration, right, twenty-six; left, eighteen; modified Caldwell-Luc showed right sinus filled with thick, yellow pus; two days later, same operation was performed on left side for relief of subjective symptoms; no pathologic changes were found.

Some acutely infected mastoids have shown greater intensity and longer duration than the opposite uninvolved side. The same observation has been made on two different occasions in comparing sclerosed with pneumatized mastoids, the former transmitting sound much more readily.

In doing this work, several important sources of error should always be guarded against. The tuning fork and stethoscope bells must be held with firm, even pressure, the former always in the exact sagittal plane of the head and the latter equally and symmetrically over each antrum, frontal or mastoid as the case may be. With a little experience, differences in intensity can be readily detected. Throwing the lever back and forth quickly is essential for accurate comparisons, as the sound intensity of even a ninety second fork fades away with surprising rapidity. Sound duration is difficult to determine. However, with a little experience the average of not less than three tests should reduce this source of error to about 10 per cent; consequently, only differences greater than this should be considered significant. If the observer's own hearing is defective, suitable allowances should be made. Extraneous noises should be excluded as far as possible, and the tuning fork struck with equal force as nearly as may be.

CONCLUSION

It would seem fair to state that auscultation and percussion may become procedures of value in the diagnosis of accessory nasal sinus disease. They are purely objective symptoms. The evidence that they can be expected to furnish will be only corroborative, but nevertheless worthy of consideration if the observations of others confirm what has been set forth here.

25 East Washington Street.

Clinical Notes, Suggestions and New Instruments

AN UNUSUAL PATHOLOGIC CONDITION OF THE STOMACH WITH ABNORMAL OPENING INTO THE JEJUNUM

P. R. CASELLAS, M.D., EL PASO, TEXAS

Mrs. B. H. H. was referred to us by Dr. Paul Rigney for gastro-intestinal examination. A liquid barium meal was given, the total volume of which was 19 ounces (562 cc.). It revealed a stomach shaped between the cow horn and fish-hook type, slightly displaced to the left, very flexible and very movable. A gastrospasm at the cardiac end of the stomach causing esophageal retention was observed as soon as the meal was given. It partly disappeared with the patient in the prone position. From the lesser curvature, at the pars media, a large niche equal in size and shape to the pyloric end of the stomach could be seen. This pouch emptied rhythmically with the pyloric end of the stomach, which was seen in its normal position, so that the barium meal passed into the intestine through these two different channels. There was some peristaltic unrest, the meal passing from the stomach very rapidly. At the end of three hours the stomach contained about one third of the meal. The outline of the large niche at the lesser curvature and the pyloric end of the stomach could be made out clearly. Both were seen connected to the intestine, the pouch apparently emptying into the jejunum. At the end of twenty-four hours the upper gastro-intestinal tract was found empty, the meal occupying the entire colon.

The history of this case is inconclusive; save for the fact that the mother died of cancer, there is nothing of importance

Fig. 1.—Appearance of the stomach: apparently double pylorus; gastrospasm at the cardiac end, which was present about twenty minutes after the ingestion of the meal. A spine pressure filling defect can be seen.

in the family history. The patient ventures the information that about seven years ago for a period of about three years the stomach "boiled up," and she had frequent "heartburn" and a constant bitter taste in her mouth. She never vomited or passed blood. The general complaint now is gastric distress; no pain. She never had pain at any time.

Congenital deformity can usually be traced to the embryologic formation of the organ in question. Congenital gastric defect, such as lack of patency of either end of the stomach, or misplacement of the organ, such as thoracic stomach, can usually be explained embryologically; but a double pylorus could hardly be expected to follow the embryology of the stomach. I therefore assume that at some time during this patient's life a large perforating type of ulcer existed in the lesser curvature: that a perigastritis at the site of the ulcer ensued, bringing about adhesions between the niche and the jejunum, and that later the ulcer perforated

Fig. 2.—Six hours after the ingestion of the meal, showing gastric residue: The outline of both pouches shown in the immediate examination (fig. 1) should be noticed; also the communication between them, and between them and the intestines.

into this part of the intestine, giving rise to the present condition. The mildness of the symptoms in this patient did not call for surgical intervention, so that we are unable to report any biopsy observations.

511 Roberts-Banner Building.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

PERTUSSIS BACILLUS VACCINE (See New and Nonofficial Remedies, 1926, p. 352).

Eli Lilly & Company, Indianapolis.

Pertussis Vaccine.—(See New and Nonofficial Remedies, 1926, p. 353). Also marketed in single 5 cc. vial packages containing 5,000 million killed bacteria per cubic centimeter.

SCARLET FEVER STREPTOCOCCUS ANTITOXIN (See New and Nonofficial Remedies, 1926, p. 331).

Eli Lilly & Company, Indianapolis.

Scarlet Fever Streptococcus Antitoxin-Lilly (Refined and Concentrated).—(See New and Nonofficial Remedies, 1926, p. 332). Also marketed in packages of one syringe, prophylactic dose, containing sufficient antitoxin to neutralize 150,000 skin test units.

H. K. Mulford Company, Philadelphia.

Scarlet Fever Streptococcus Antitoxin Concentrated.—(See THE JOURNAL, May 8, 1926, p. 1440).—Also marketed in single 1 cc. vial packages (for the diagnostic blanching test) containing sufficient scarlet fever antitoxin for five tests.

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SATURDAY, OCTOBER 23, 1926

THE TREATMENT OF GENERAL PARALYSIS BY FEVER-PRODUCING METHODS

Reports of the alleged beneficial effects of febrile diseases on various psychoses have been current since the days of hippocratic medicine. Several methods of producing fever in patients suffering from general paralysis had already been tried when von Jauregg [1] introduced the malarial method in 1917. This usually consists in inoculating a patient with malarial blood, which leads to the development of malarial paroxysms. The patient is generally allowed to have from eight to fifteen paroxysms, after which the malaria is cured by quinine. According to the recorded observations in a considerable number of general paralysis patients treated in this manner, very good remissions have been obtained shortly after the course of the malarial infection.

There are numerous disadvantages or limitations of the malarial method as a therapeutic measure. Foremost is the circumstance that the disease must be transmitted from patient to patient, as it is not practical to keep the living organism either in culture or in a laboratory animal. As a consequence, such treatment in many communities is not available. Furthermore, the treatment may be somewhat heroic, for malaria causes severe reactions and leads to a certain mortality. Owing to the destruction of red cells, a considerable degree of anemia is usual. Jaundice is not an infrequent complication.

These circumstances nave led to the search for less severe modes of inducing febrile paroxysms. The most recent suggestion,[2] from Boston, involves the use of *Spirochaeta morsus-muris,* the infecting microorganism of rat-bite fever, or sodoku. A supply of the spirochete can be maintained in the ordinary laboratory animals. The fever can be transmitted artificially to man. The engendered disease, sodoku, produces a generalized reaction with the production of fever and antibodies. It is not dangerous to the life of the patient and is easily controlled by arsphenamine.

In commenting on this proposal, Solomon and his collaborators point out that rat-bite fever is less debilitating to the patient than malaria. A further value is that it can be given to patients who are more or less immune to malaria. It is also available as an addition to the malarial therapy and may be given either before or after malaria without any evident modification of the clinical course of either condition. The principles thus formulated are appealing and deserve careful consideration in relation to the treatment of general paralysis. Even the malarial treatment, however, is still *sub judice,* so that the new proposals must be given a most critical consideration before they can even be tentatively advocated. Where current treatment is at best of doubtful efficacy, no rational possibility should be flippantly rejected.

In this issue appears an article by Kunde, Gerty and Hall [3] showing the results obtained by producing fever, through a method that does not involve the introduction into the body of any living organisms. Obviously, such a method, if equally successful in its end-results, has distinct advantages over those involving the use of infections.

1. Von Jauregg, W.: Ueber die Einwirkung der Malaria auf die progressive Paralyse, Psychiat.-Neurol. Wchnschr. **20**: 132 (Aug. 31) 1918.
2. Solomon, H. C.; Berk, A.; Theiler, M., and Clay, C. L.: The Use of Sodoku in the Treatment of General Paralysis, Arch. Int. Med. **38**: 390 (Sept.) 1926.

CORYNEBACTERIA AND A METHOD OF CLASSIFICATION

Several months ago, comment was made in THE JOURNAL [4] on morphologic and physiologic variations in diphtheria bacilli.[5] As if the inconstant behavior of this group were not sufficiently confusing, identification has been additionally complicated by the "diphtheroid" organisms. Both groups, now classed together as "corynebacteria," [6] have been the object of attempts at classification since 1888. Whereas efforts expended on the diphtheria organisms proper have met with some success, classification of the diphtheroid types heretofore has been virtually impossible. By the utilization of photomicrography,[6] however, the diphtheroid types have been separated into seventy-two varieties. Development of this method into a practicable procedure has been neither rapid nor easy. About a decade ago, at the end of a year of patient labor about eighty good photomicrographs of the bacteria found in chronic gonorrhea were obtained. Now technic and apparatus have been so improved that an annual output of more than 1,500 photomicrographs is possible. Cultural characteristics and morphology are thus recorded more clearly than is possible by written description. Reliance is not placed on photography alone, however; all practicable

3. Kunde, M. M.; Hall, G. W., and Gerty, F. J.: Nonspecific Protein Therapy in the Treatment of General Paralysis, this issue, p. 1376.
4. Variation in Diphtheria Bacilli, Current Comment, J. A. M. A. **86**: 557 (Feb. 20) 1926.
5. Crowell, M. J.: Morphologic and Physiologic Variations in Descendants of a Single Diphtheria Bacillus, J. Bact. **11**: 65 (Jan.) 1926.
6. Thomson, David; and Thomson, Robert: The Corynebacteria (Diphtheria Bacillus and "Diphtheroids"), The Importance of Microphotography as an Aid to Their Classification and Identification, Annals of the Pickett-Thomson Research Laboratory **2**: 51 (July) 1926, St. Paul's Hospital, 24 Endell Street, London, W. C. 2; in America, Baltimore, the Williams and Wilkins Company, 1926.

cultural and other tests are applied. Results of such tests are recorded with as much care as is expended on the photography. By combining all methods of identification, the seventy-two varieties of diphtheroid organisms have been subdivided into five groups. Primarily, these groups are set off according to the following criteria:

Group I. Nonchromogenic, profuse growers, aerobic or facultative (twenty-two varieties).
Group II. Nonchromogenic, profuse growers, anaerobic (four varieties).
Group III. Nonchromogenic, delicate growers, aerobic or facultative (twenty-five varieties).
Group IV. Nonchromogenic, delicate growers, anaerobic (five varieties).
Group V. Chromogenic, profuse growers, aerobic or facultative (sixteen varieties).

Other characteristics are observed and recorded. When the group, according to these standards, has been ascertained, the photomicrograph of the organism under consideration is compared with others, and, finally, its fermentation reactions are noted. In this way it has been possible, thus far, to determine whether or not a given organism is identical with one already examined or whether it represents a new type.

The investigators responsible for this work believe that they have described their seventy-two varieties of diphtheroid organisms so fully that they can be identified for all time. The authors do not, however, consider that they have described all the varieties that exist, or that those discovered in the future can be classified entirely in their five main groups. At all events, it is apparent that they have performed work that has baffled some of their predecessors. Their method in this work is practicable in highly skilled hands. Possibly the method may be employed not only for the final solving of the problem of the diphtheroid organisms but also for classification in other fields.

THE ABSORPTION OF CALCIUM AND PHOSPHORUS

Knowledge of the conditions and extent of the absorption of nutrient materials from the alimentary tract is essential to an intelligent understanding of many abnormal as well as normal conditions. If the alimentary utilization is poor, it is frequently desirable to know what portion of the gastro-intestinal canal or what contributory secretory gland may be disturbed in function. As a recent writer has expressed it, measurements of the proportions of the ingested food substances made available to the uses of the body by digestion and absorption are necessary to the estimation of the nutritive value of foods. They serve also as indexes of the digestive and absorptive powers of the gastro-intestinal tract in health and in disease, and of the factors influencing digestion and absorption. Studies of food utilization considered from this standpoint have heretofore involved rather laborious analytic procedures and consequently have been limited in scope and frequency. Bergeim of the University of Illinois College of Medicine has proposed a simplified method of determining food digestibility by adding a practically insoluble and unabsorbable substance of suitable physical consistency to the intake. Such a material, for example, iron oxide, follows the food through its alimentary course and is excreted with practical completeness in the feces. By determining the ratio of the amount of any given food substance to the amount of iron in the food and in the feces, the percentage utilization may be calculated.

With this new procedure, Bergeim[1] has already succeeded in pointing out some striking features in the behavior of calcium and phosphorus in alimentation. Lactose in the diet was observed to induce pronounced increases in the amounts of calcium and phosphorus absorbed, being in this respect far superior to glucose, sucrose, maltose or starch, and superior to dextrin. The effect was greater on calcium than on phosphorus absorption. The influence of lactose and to a lesser extent of dextrin and other carbohydrates on calcium absorption is believed to be due to increased lactic acid fermentation in the intestines, with resulting increased acidity of the intestinal contents. It is well known, Bergeim argues, that increase of acidity markedly increases the solubility of such salts as calcium phosphate. Lactose, when administered in considerable amounts, is known to produce a distinctly acid condition throughout the gastro-intestinal tract. Dextrin has a similar but lesser effect. Other common carbohydrates have little effect apparently because they or their products of hydrolysis are very rapidly absorbed. It has therefore seemed reasonable to suppose that lactose administration might by increasing the acidity of the intestinal contents also increase the absorption of calcium. Bergeim believes that the pronounced effectiveness of lactose in increasing calcium absorption should be considered in connection with the preparation of milks for infant feeding and generally in the planning of diets, as calcium is probably one of the limiting factors in the rations of many people. This does not necessarily mean that lactose is always the sugar of preference. Sugars more readily digested and absorbed and producing less fermentation in the bowel may be preferred, for example, in certain gastro-intestinal disturbances. Nor will lactose take the place of antirachitic substance or of phosphorus in the diet. When, however, calcium absorption is one of the main factors to consider, the effectiveness of lactose in this direction should be borne in mind. In this connection, Bergeim concludes, the much higher proportion of lactose to calcium and phosphorus in human as compared with cow's milk is of interest.

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1. Bergeim, Olaf: Intestinal Chemistry: IV. A Method for the Study of Food Utilization or Digestibility, J. Biol. Chem. **70**: 29 (Sept.) 1926; V. Carbohydrates and Calcium and Phosphorus Absorption, ibid., p. 35; VI. A Method for the Study of Absorption in Different Parts of the Gastro-Intestinal Tract, ibid., p. 47; VII. The Absorption of Calcium and Phosphorus in the Small and Large Intestines, ibid., p. 51.

The new method of study has also been applied to a determination of the comparative absorption and secretion of calcium and phosphorus in different parts of the alimentary tract. The latter is the seat of elimination as well as intake of these inorganic elements. It appears that animals rendered rachitic by phosphorus-low diets, as well as such animals given cod liver oil, showed a considerable degree of calcium absorption from the small intestine. The rachitic condition could not therefore be due to a failure of calcium absorption. However, the animals given cod liver oil showed a positive calcium balance throughout the intestines. Phosphorus secreted into the upper tract was absorbed in the lower intestine, to produce an ultimate positive balance of this element also. In the rachitic animals the calcium absorbed in the upper intestine was excreted into the lower intestine, leading to a negative or subnormal balance. Coincident with this marked excretion of calcium into the lower bowel there was a failure of phosphate to be adequately reabsorbed and hence a loss of the latter to the body. Bergeim's hypothesis to explain the situation arising in rickets takes these facts into account. The failure of absorbed calcium to be used in calcification is believed to be due to the low phosphate concentration of the blood. Antirachitic substance may act by elevating blood phosphate by promoting the breakdown of organic tissue phosphates, thus leading to increased deposition of calcium with lessened excretion into the intestine and consequent better absorption of phosphate from it. The problem is at best still a complex one.

THE MINIMAL ENDOGENOUS NITROGEN METABOLISM

Fasting has long had some popular vogue as a remedial procedure, exploited as a rule by faddists. Short fasts have often been used in the treatment of various diseases. These circumstances are in contrast to the fear of undernutrition that confronts many persons who, as a result of some malady, are deprived of their usual energy intake. The contemplation of inanition, undernutrition, hypernutrition and malnutrition, respectively, therefore awakens varied sentiments, depending on the circumstances and the point of view of those concerned. Recently the possibilities of restricted fasting have again been brought into prominence, on the one hand, through the demonstrations that brief periods of inanition in healthy persons are by no means as "devastating" as has frequently been assumed, and, on the other hand, by the circumstance that reductions in body weight are frequently being desired for one reason or another. In some instances, the dictates of feminine fashion have furnished a motive; in others, the fear of an undesirable obesity has been foremost.

Certain facts about inanition seem to be well established. The general rate of metabolism is lowered during a fast. Protein metabolism also is decreased and may reach a fairly low level, depending on the nutritive condition of the person concerned. The protein loss from the body is greatly modified by the simultaneous supply of fat and carbohydrate. Only when these foodstuffs are available in liberal abundance may the endogenous nitrogen metabolism and corresponding protein destruction be expected to reach its minimum. As it is customarily stated, fat and carbohydrate "spare" endogenous nitrogen metabolism.

There have been numerous attempts to ascertain how small the nitrogen "turnover" may become in the body when the energy requirements are met from nonprotein sources. The figures may be assumed to represent, in a sense, the minimum "wear and tear" of protein in the organism. Figures approximating a waste nitrogen output of 0.3 Gm. or more per kilogram of body weight have been noted on several occasions. The lowest record, however, has been supplied by Smith,[1] who believes he has secured the absolute minimum in the person under investigation, with a daily output of 0.24 Gm. of nitrogen per kilogram during a period of twenty-four days. The diet, though liberal in energy, was practically nitrogen-free. This prolonged protein restriction and continued negative nitrogen balance was not accompanied by any objective deleterious effects on the person.

The study of the urine in such cases is of great interest. Urea and ammonia no longer dominate the picture of the nitrogenous waste. Creatine and creatinine remain conspicuous, representing perhaps the specific metabolism of the muscular tissues. Smith has presented a simple conception of what this means. As long as the energy requirements of the muscle cells are supplied by carbohydrate and fat, their chief nitrogen demands consist of the replenishment of a small amount of creatine from the amino-acid arginine. The protein or amino-acid requirements for glandular metabolism would seem to be almost negligible under conditions in which the energy is supplied by carbohydrate and fat. Muscle cells and particularly gland cells require a certain amount of purine nitrogen, but either this is a small quantity or the body cells have marked powers to conserve this form of nitrogen or to resynthesize the products of purine catabolism.

Such remarkable records should not be interpreted as furnishing any criteria for the optimal protein intake of man. They merely indicate how rigorous the protein restriction may be made for a considerable time without outspoken harm; and they point to the marked effectiveness with which an abundance of the nonnitrogenous nutrients may bring about a conservation of the body protein in times of stress. Probably restriction in the supply or defects in the absorption of other food factors, such as inorganic salts and vitamins, make themselves apparent in symptoms of nutritive disorders far more readily than does even a fairly rigid limitation of protein intake.

1. Smith, M.: The Minimum Endogenous Nitrogen Metabolism, J. Biol. Chem. 68: 15 (April) 1926.

Current Comment

BUILDING THE HEALTH HOUSE

The architect does not cooperate with carpenters, plumbers, steam-fitters, electricians, sheet metal workers, bricklayers, painters and other artisans in the building of a house. They cooperate with him. The banker does not cooperate with borrowers. They cooperate with him. And so it is in all well conducted affairs of life. The cooperation flows, or should flow, toward those qualified by education, experience and training for leadership. The one outstanding exception is in the affairs of health, where the flow of cooperation is so actively in a state of reversed peristalsis that the normal current is in danger of elimination. What sort of a house would one have, and what would it cost, if the architect (instead of the other way round) had to cooperate with the many types of artisans engaged in its construction? The answer is obvious, and yet in the analogous complex service of health and medicine, with its many types of technical specialists and unskilled workers, the flow of cooperation is largely in reverse action and the consequences are clearly visible in the architecture of the health house we are building, and in its costs. There are some thousands of groups of technicians, artisans and unskilled laborers working in health, and each of them not only calls on the physician when in trouble, but demands, and to a large extent secures, the cooperation of the physician in supporting this or that group in their schemes aimed at the control of work preeminently medical. The physician is the only adequately educated, experienced and trusted architect in building health houses for individuals or for masses. Even he may not be all that he should be, but in any event he is the best there is and he eventually must be the architect or the hired man. He cannot be all things to all men, nor can he do his duty as the handy man to groups who operate the n^{th} movement to revolutionize the health of the world by promoting some newly evolved technical device or social scheme.

GOLDEN ANNIVERSARY OF THE AMERICAN DERMATOLOGICAL ASSOCIATION

Fifty years represents a comparatively brief period in the history of medicine; yet a half century includes a significant era in the development of certain of its specialties. Some of the most modern of these, as serotherapeutics and roentgenology, have even briefer periods to the credit of their evolution. Modern dermatology is usually dated from the work of Robert Willan at the beginning of the nineteenth century. At that period the accurate descriptions and illustration of cutaneous diseases were preeminently emphasized. In his History of Medicine, Garrison has designated histologic investigation, first conspicuous in the work of von Hebra, who died in 1860, as the second phase in the modern development of dermatology; while the newest period—the bacteriologic and parasitologic era—in which many cutaneous disorders have been traced to microbic organisms, belongs essentially to the latter part of the nineteenth century and thereafter. In the light of this seeming modernity of dermatology, it is gratifying to record that the devotees of the study of diseases of the skin are celebrating the golden anniversary of the American Dermatological Association in the same year as the sesquicentennial of our country's proclamation of independence. In a biographically interesting address, Dr. George Henry Fox [1] has made reference to the careers of some of the American pioneers who ventured to identify themselves early with what was not long ago a new specialty. There were local dermatologic societies in this country before 1876; and diseases of the skin have had recognition for about a century in the United States as a group of maladies meriting independent expert attention; but a concerted nation-wide community of interest was organized half a century ago. The next fifty years is likely to include a progressive development of dermatology in the direction of etiology as well as therapy. The needs of this important field of medicine are sufficient justification for the successful perpetuation of the American Dermatological Association.

ALUMINUM AND CANCER

In the absence of any scientifically established bacterial organism or factors other than those associated with chronic irritations as the cause of cancer, the views of all sorts of nondescript proponents of unusual ideas as to the basis for this disease continue to receive more than ordinary attention in the public press, as well as in medical journals. The view of Arbuthnot Lane that white bread had something to do with the matter, of another European investigator that cockroaches were carriers of the disease, of an American investigator that the eating of fish was primarily responsible, have all had their day in the press and their moment in the limelight. Now comes one Dr. Charles T. Betts, a dentist of Toledo, Ohio, with a pamphlet of thirty-six pages, presumably sold for $1 by the Research Publishing Company of Toledo, Ohio. He urges, on the basis of some naive and totally immaterial experiments, and the fact that the use of aluminum cooking utensils and the incidence of cancer have regularly increased, that the latter is due to the former. His reasoning is a typical example of the manner of mishandling medical statistics by those who have not the slightest conception of chemistry, medicine or statistical analysis. First, it is not at all certain that there has been an alarming increase in the incidence of cancer. Secondly, it is reasonable to believe that the use of aluminum cooking utensils has increased because they were found to be desirable for cooking purposes. Thirdly, investigations made in Great Britain under the auspices of the Medical Research Council indicated that cooking, even of acid fruits and vegetables, for long periods of time in aluminum ware showed so little aluminum in the juices after cooking that it required the most delicate chemical tests to indicate its presence. Indeed, not only the fruits but the actual acids themselves were boiled in aluminum

1. Fox, G. H.: The Founding of the American Dermatological Association, Arch. Dermat. & Syph. 14: 371 (Oct.) 1926.

ware, without the giving off of more than slight traces of aluminum. It is difficult to understand why dentist Betts should be so especially interested in attacking the use of aluminum ware and why his $1 pamphlet should be sent in considerable numbers without charge to various libraries and other public institutions, and to dealers in hardware. Public education in matters of health is sometimes abused by those who, through the nature of their professional training, should be the first to protect the public confidence by spreading information based only on scientific fact. The pamphlet of Betts is a pernicious attempt to promote a peculiar view of cancer without the slightest scientific evidence to support its promotion.

"NO SURGERY—NO DRUGS—NO SERUMS"

The slogan that appears as the title of this comment is conspicuously displayed in the literature of the Lindlahr Sanitarium of Elmhurst, Ill. Beneath that slogan the authors of the catalogue of the institution mentioned say: "We do not believe in the knife or in the drug bottle. We know that nature has supplied sufficient things for the healing of mankind without resorting to these dangerous, destructive methods." The Lindlahr Sanitarium is a so-called nature-cure institution, in which chiropractic, osteopathy, abramsism, water cures, naturopathy and all sorts of peculiar methods have from time to time had their day. Especial emphasis is placed on starvation diets, vegetarianism and similar one-idea systems for the control of disease. The critic Mencken emphasized recently that leaders of opinion in the socialistic field have inclined toward peculiar medical systems. The case of Upton Sinclair, who has followed practically every vagary in the medical field, is a conspicuous one. Eugene Debs, repeatedly a candidate for President of the United States as the leader of the Socialist party, was likewise addicted to naturopathy. About a month ago he returned to the Lindlahr Sanitarium, where he had been for a rest cure several years ago, to recuperate from repeated attacks of heart disease. About October 17, although previously fairly well and able to be about, he began to lapse into unconsciousness. He was attended by the practitioners of the Lindlahr Sanitarium. Eventually, his relatives asked for consultation. Recognizing the nature of the institution in which Debs was being treated, physicians hesitated to go as consultants, but attended explicitly at the call of the relatives, since the condition was so severe that the patient could not be moved. He was found moribund, greatly emaciated and dehydrated, with one pupil contracted and the other markedly dilated, the heart fibrillating, and the lungs congested. The records kept by the institution indicated that drugs had been administered regularly from the moment when the symptoms became serious. True, some of the medicine administered had been labeled merely as homeopathic remedies; some of it was an extract of cactus; but eventually the patient received digitalis preparations and in increasing doses. The slogan "no drugs" is one to catch the unwary. In times of stress, even the nature-cure healer inclines to remedies that have been established as efficient by medical science.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALASKA

Hospital News.—The base hospital of the Alaska Railroad, located at Anchorage, Alaska, was operated at a cost of $46,011 during the last fiscal year. The loss sustained was $22,716, which is $679 more than the loss in operation for the previous fiscal year. The cost per patient was $5.77, as compared with $6.90 in 1925. The patient days for the fiscal year were 7,973.5, with 3,579 employees of the Alaska Railroad and 404 United States soldiers receiving free service in the hospital. A total of 260 operations were performed during the year. Dr. Joseph H. Romig was transferred from the position of assistant surgeon of the railroad at Fairbanks to railroad surgeon at the Anchorage base hospital, and Dr. Frank R. de la Vergne was appointed assistant surgeon at Fairbanks.

CONNECTICUT

Chiropractor Not Competent Under Compensation Act.—The state compensation commissioner has decided that a chiropractor is not a competent physician or surgeon within the meaning of the workmen's compensation act. The decision was made in the case of Charles O. Stanley, it is reported, who claimed damages from his employers for arthritis which was said to follow an injury of his knee. Stanley engaged a chiropractor to treat his ailment. The commissioner held also that by law a chiropractor is limited in his treatment to palpation of the vertebrae, and that he was unable to find in medical books that such treatment would cure arthritis of the knee.

DELAWARE

State Medical Election.—At the annual meeting of the Medical Society of Delaware, October 12-13, Dr. Harold L. Springer, Wilmington, was elected president; Drs. George Frank Jones, Georgetown, and James Martin, Magnolia, vice presidents; Dr. Samuel C. Rumford, Wilmington, treasurer, and Dr. William O. LaMotte, Wilmington, secretary and delegate to the American Medical Association.

GEORGIA

Changes in State Medical Examiners.—Dr. Jarrett W. Palmer, Ailey, has been made secretary of the State Board of Medical Examiners of Georgia to succeed Dr. Charles T. Nolan of Marietta; Dr. Clarence M. Paine, Atlanta, has been elected president of the board, and Dr. Luke Robinson, Covington, a member of the board.

Personal.—Dr. John W. Oden, formerly of Milledgeville, has been appointed superintendent of the Georgia Training School for Mental Defectives, Gracewood.——Dr. Alexander G. Little, Valdosta, has been elected president of the Lowndes County Medical Society.——Dr. John D. Jungmann, Columbus, has been appointed to the staff of the Philadelphia Housing Association, Philadelphia.

Society News.—Dr. and Mrs. Edgar B. Davis, Byronville, entertained the members of the Dooly County Medical Society and the Woman's Auxiliary, recently.——The Jenkins County Medical Society entertained the Burke, Emanuel and Screven County Medical societies, recently, at a barbecue; among others, Dr. Quinney A. Mulkey read a paper on "The Acute Abdomen."——Dr. Benager C. Teasley, Hartwell, has been elected president for the ensuing year of the Eighth District Medical Society, and Dr. Daniel M. Carter, Madison, secretary-treasurer, reelected.——Dr. Lewis M. Gaines addressed the Fulton County Medical Society, Atlanta, October 7, on "Neurosyphilis."

Georgia Will Have a Physician Governor.—For the first time in the history of the state, a physician is to be governor of Georgia. According to the Atlanta *Journal*, Dr. Lamartine Griffin Hardman of Commerce, by virtue of his nomination for the governorship in the runover primary of October 6, will become the governor next June. Dr. Hardman was born in Georgia and graduated from the Georgia Medical College; he did postgraduate work in New York, Philadelphia and

London, and practiced medicine in Georgia for many years. He has taken a prominent part in the business and industrial life of his community. Dr. Hardman is a fellow of the American Medical Association.

ILLINOIS

Society News.—Dr. William J. Mayo, Rochester, Minn., will address the Adams County Medical Society, Quincy, October 28, 1:30 p. m., at the Elks Club, on "Gastric and Duodenal Ulcer"; Dr. John J. Pemberton, Rochester, on "The Goiter Problem," and Dr. William C. MacCarty, Rochester, on "New Revelations in the Pathology of Cancer." There will be a banquet in honor of Dr. Mayo at the Quincy County Club at 6 p. m.——Dr. Glover H. Copher, St. Louis, addressed the Adams County Medical Society, October 11, on "Cholecystography."——Dr. Harold Swanberg, Quincy, addressed the Fulton County Medical Society at Canton, Ill., October 5, on "Radium Therapy."——Dr. Julius Grinker, Chicago, addressed the Sangamon County Medical Society, Springfield, October 7, on "Selected Chapters in Neurology."——Dr. Herman L. Kretschmer, Chicago, addressed the Scott and Rock Island County Medical Society, Rock Island, October 5, on "Relation of Urology to General Medicine."——Dr. Irving F. Stein, Chicago, addressed the Elgin Physicians' Club, October 13, on "Cesarean Section"; Dr. Milton Jacobs, Elgin, was elected secretary of the club to succeed the late Dr. Floyd A. Pingree.

Chicago

Personal.—Dr. Joseph C. Springer, for many years coroner's physician for Cook County, retired from that position, October 16, it is reported, and Dr. Irving A. Porges was appointed as his successor.

University News.—Dr. Friedrich von Müller, professor of medicine, University of Munich, gave an address at the University of Chicago, October 11, on "Physical Methods of Clinical Diagnosis," and at Rush Medical College, October 12, on "Postencephalitic Parkinsonism."

Illegal Practitioners in the Loop.—The following naprapaths were arrested, October 14, it is reported, on warrants charging them with violating the state medical practice act:

Lester C. Gill, 159 North State Street.
Olive K. Harvey, 159 North State Street.
John E. Knechtel, 162 North State Street.
A. D. Yancey, 108 North State Street.

Hospital News.—The Jackson Park Hospital, 7531 Stony Island Avenue, will build a nine story addition which will make the total capacity 225 beds.——The new $750,000 hospital for crippled children, Oak Park and Belden avenues, which was provided by the local lodges of Shriners, was formally presented to the city, September 12; the new hospital is the ninth in a chain of similar institutions built and supported by the Shriners throughout the country.——The fourth annual Charity Ball given by the Social Service Department of the Woman's Board of St. Luke's Hospital will be held at the Congress Hotel, November 5.

Society News.—A dinner in honor of Dr. Jabez N. Jackson, Kansas City, Mo., President-Elect of the American Medical Association, was given at the Hamilton Club, October 20, by members of the Chicago Medical Society; Dr. Jackson addressed the society on "Physiologic Considerations in Abdominal Surgery"; at this meeting, Floyd Bennett, who, with Commander Byrd, piloted the first airplane to the north pole, addressed the society.——Dr. Ernest Lowenstein of the University of Vienna, Austria, will address a joint meeting of the Chicago Medical Society and the Chicago Tuberculosis Society, Marshall Field Annex, sixth floor, October 27, on "Facts on Which Specific Treatment of Tuberculosis Is Based."——Dr. Andrew L. Skoog, Kansas City, will address the Chicago Neurological Society, October 28, at the Drake Hotel, 8:15, on "Herpes Zoster in the Trigeminal Area" and Dr. John B. Doyle, Rochester, Minn., on "Obstruction of the Longitudinal Sinus."

LOUISIANA

Dr. Mendelson Appointed Assistant to Professor Castellani.—Dr. Ralph W. Mendelson has arrived in New Orleans to take up his duties as assistant professor of tropical medicine at Tulane University School of Medicine under the direction of Prof. Aldo Castellani. Dr. Mendelson received his M.D. degree from Northwestern University Medical School in 1911, and a certificate of public health from Harvard in 1915. He is reported to have accompanied Dr. Richard P. Strong, Boston, to the Balkans in 1915, and to have been sent to Siam in 1916 as sanitary expert for that government. After serving in the World War, Dr. Mendelson returned to Bangkok, Siam, as acting medical officer of health and later as principal medical officer of health; he first met Professor Castellani while serving in the Balkans.

MARYLAND

Hospital News.—The new building of the Home for Incurables, Fortieth Street and Cedar Avenue, was opened, October 15; the home, a member of the Community Fund of Baltimore, was incorporated in 1883.——A three day campaign for funds for the Union Memorial Hospital and for equipping the Johnston Memorial closed with a dinner, October 8, at the Emerson Hotel with more than $172,000 subscribed.

Causes of Death.—The state department of health has made a study of the causes of death in the white and negro races in Maryland during the last three years, and has found the most important causes in each race to be in the following order:

White	Negro
Heart disease	Tuberculosis
Bright's disease	Heart disease
Cerebral hemorrhage	Cerebral hemorrhage (in 1925)
Cancer	Bright's disease (in 1925)
Tuberculosis	Diarrhea and enteritis (in 1925)

Cancer was tenth as a cause of death of negroes, and diabetes was not listed as a principal cause of death among negroes.

Research Expedition Returns.—The expedition to Central America, organized and directed by the Johns Hopkins School of Hygiene and Public Health and conducted under the auspices of the International Health Board, returned, September 15. Revolutions in Nicaragua in May and August interfered with the study of drugs for the removal of worms in which the International Health Board was especially interested, but, according to *Science*, it was found that almost 40 per cent of the soldiers examined and treated by members of the expedition were infected by dog and cat hookworms which were not known to be present in man in Central America. This discovery will aid in public health work in those regions. An important object of the expedition was to determine what diseases are likely to be carried to the United States by shipments of live stock. It was found that cattle in the Central American countries suffered from tick and tick fever, but that tuberculosis appeared to be rare among the range cattle. The important bacterial diseases in this connection were anthrax, tetanus and blackleg. Swine suffered especially from kidney worms and cysticercosis. The expedition brought back about 150 bottles of prevailing parasites, some of which apparently are new and may on further study prove to be of scientific and economic importance (THE JOURNAL, April 17, p. 1220).

MICHIGAN

Special Tuberculosis Meeting.—A joint meeting of the Michigan Trudeau Society, the Laënnec Society of Ontario, the Wayne County Medical Society and the Michigan Tuberculosis Association was held in Detroit, October 12-13; there were addresses by Dr. Hans C. Jacobæus, Stockholm, Sweden; Dr. Ernst Lowenstein, Vienna, Austria, and Sir Henry Gauvain, director, Treloar Hospital for Crippled Children, Alton, England.

Postgraduate Conferences.—Plans have been considered by the Michigan State Medical Society for eight postgraduate conferences during October and November; one was held at Manistee, October 14; there will be another at Pontiac, November 27; the other dates have not been arranged. The program of postgraduate conferences was enthusiastically endorsed at the last annual meeting of the state society individually and collectively, and from the councilors representing the fourteen districts; there was a demand for more.

Society News.—At the eighteenth annual meeting of the Detroit Society of Neurology and Psychiatry, October 7, Dr. Theophile Raphael, state psychopathic hospital, Ann Arbor, was elected president, and Dr. Groves B. Smith, secretary-treasurer. Dr. Smith addressed the society on "A Case of Questionable Encephalitis." The next meeting will be the first Thursday in December.——Dr. Wendell C. Phillips, New York, President, American Medical Association, will address the Detroit Oto-Laryngological Society, October 27.

NEW YORK

Personal.—Dr. R. J. A. Berry, professor of anatomy, University of Melbourne, Australia, has accepted the invitation of the Rockefeller Foundation to visit the United States and discuss the proposed establishment of a medical research

institute in connection with the erection of the new Melbourne Hospital.

Public Health at County Fair.—About 8,000 people visited the health demonstration and exhibit of the Suffolk County Tuberculosis and Public Health Association at the recent county fair. The state department of health gave a demonstration of the care of children and provided a projectoscope for a demonstration of immunization against diphtheria by toxin-antitoxin. The tent on the fair grounds where babies and children were measured and weighed was crowded all the time. The moving picture health demonstration was attended by crowds. There was a display and sale of articles made by patients at the Holtsville Sanatorium and a first aid station which served the sick and injured.

New York City

Personal.—Dr. Janet G. Travell, a 1926 graduate from Cornell University Medical School, won the first of the John Metcalfe Polk Memorial Prizes for scholarship; Dr. Travell won second place in the group of candidates who took part I in the National Board of Medical Examiners examinations in February.——Dr. Theodore C. Guenther has been elected president of the medical board of the Norwegian Hospital.

Practical Medical Lectures.—The Medical Society of the County of Kings has arranged a program of postgraduate medical lectures which are being given Friday afternoon at 5 o'clock. The program as announced follows:

Dr. Lawrason Brown, October 8: "Diagnosis of Pulmonary Tuberculosis."
Dr. Harvey B. Matthews, October 15: "Uterine Hemorrhages."
Prof. Eugen Joseph of Berlin, October 22: "Stones in the Urogenital System."
Dr. Charles A. Gordon, October 29: "Puerperal Sepsis."
Dr. Alfred C. Beck, November 5: "Occipitoposterior."
Dr. John H. Gibbon, November 12: "Common Sense in the Treatment of Fractures."

Dinner to Dr. Fox.—A dinner to celebrate the eightieth birthday of Dr. George Henry Fox was given by his son, Dr. Howard Fox, at the University Club, October 8. Dr. Samuel A. Brown was toastmaster, and the speakers included Dr. Wendell C. Phillips, President of the American Medical Association; Dr. William Allen Pusey, Chicago, Past President of the American Medical Association; Dr. William Pepper; Dr. Frank S. Meara; Louis I. Harris, health commissioner, and Hon. Bainbridge Colby. Dr. Fox has been for many years a teacher of dermatology. He is a past president of his county and state medical societies and the author of works on dermatology.

NORTH DAKOTA

Personal.—Dr. Alexander J. McCannel, for many years a practitioner, and a former president of the state medical association, has moved to Silverton, Ore.

Hospital News.—Trinity Hospital, Jamestown, opened a new five story addition costing $281,000, October 5; the capacity of the hospital is now eighty-five beds; it is owned by the Sisters of the Order of St. Joseph.

Society News.—Dr. Julius O. Arnson, Bismarck, addressed the Stutsman County Medical Society, Jamestown, September 27, on "Some Factors That Influence Civilization"; Dr. Henning M. Berg, Jamestown, reported two cases of poisoning from shoe dyes. The next meeting will at the Stutsman County Clinic, Jamestown, November 27.

OHIO

Amount of Mother's Pensions.—For the year 1924-1925, Ohio distributed among 6,095 mothers the sum of $1,296,792.54 as "mothers' pensions"; in the previous year, the amount paid out to 5,938 mothers was $1,231,354.18.

Nurse for Rural Schools.—Tuscarawas is the first county in the state whose board of education has employed a public health nurse for the rural schools. The new plan, became effective September 1, according to *Ohio Health News*.

Health at Canton.—Telegraphic reports to the U. S. Department of Commerce from sixty-six cities with a total population of about 29,000,000, for the week ending October 9, indicates that the lowest mortality rate (6.2) was for Canton and that the mortality rate for the group of cities was 11.4. The mortality rate for Canton for the corresponding week last year was 10.8, and for the group of cities, 11.1.

Academy of Medicine of Cincinnati.—Dr. Victor Ray was installed as president of the Academy of Medicine of Cincinnati for the ensuing year at a meeting, September 27, in the Veterans' Memorial Building. Dr. Henry W. Bettmann was elected president-elect; Dr. Symmes Oliver, secretary, and Dr. Alexander G. Drury, treasurer, reelected. Dr. Ray presented a paper on "The Relation of Ophthalmology to General Medicine."

Personal.—Dr. Gaius E. Harmon, department of hygiene and bacteriology, Western Reserve University School of Medicine, Cleveland, has returned after a year of study with Prof. Karl Pearson at University College, London, England. ——The governor has reappointed Dr. Charles O. Probst, Columbus, a member of the Ohio Public Health Council, for a term of four years.——Dr. Dudley W. Palmer, Cincinnati, was elected president of the Association of Resident and Ex-Resident Physicians of the Mayo Clinic, at the eighth annual meeting in Rochester, Minn., October 7.

Society News.—Dr. John E. Monger, state director of health, and members of his staff, addressed the August meeting of the Darke County Medical Society; Dr. Charles I. Stephen, Ansonia, addressed the society on "Acute Ascending Myelitis."——Dr. Clark E. Hetherington, Piqua, addressed the Miami-Shelby County Medical Society, Troy, September 2, on "The Recognition of Rickets."——Dr. Emery R. Hayhurst, professor of hygiene, Ohio State University College of Medicine, addressed the Knox County Medical Society, recently, on " Light and Health and New Discoveries."

PENNSYLVANIA

Personal.—Dr. William S. Ruch, Carlisle, has been appointed coroner of Cumberland County, to succeed the late Dr. Ambrose Peffer, Newville.——Dr. Byron H. J. Jackson, who has been on the staff of the state hospital at Scranton for about twenty years, has resigned and Dr. Louis A. Milkman, Scranton, has been appointed to succeed him.

Society News.—Dr. Samuel S. Woody addressed the Allegheny County Medical Society, October 19, on "High Lights in Diagnosis and Treatment of Diphtheria, Scarlet Fever and Measles"; Dr. Zaccheus R. Scott on "Prevention and Treatment of Whooping Cough," and Dr. Robert J. McCready on "Historical Notes on Laryngeal Diphtheria."

Hospital Dedicated.—The new $3,000,000 Reading Hospital at Reading was dedicated, October 2, and the patients moved into the building the following day. The principal speakers at the ceremony were Dr. Ira G. Shoemaker, president of the state medical society, and Dr. Alfred Stengel, Philadelphia. There was a dinner to all of the physicians of Berks County in the evening. The new hospital was made possible by Gustav Oberlaender, Ferdinand Thun and Henry K. Janssen, business men whose gifts, it is reported, amounted to about $2,000,000; when additional units which have been planned are completed, the hospital will accommodate about 600 patients.

Liquor Licenses Revoked.—The federal prohibition administrator with headquarters in Pittsburgh between May 1 and October 13 issued orders revoking the liquor licenses of the following, it is reported, for the reasons indicated:

Dr. Harry C. Blair, East Brady, because of issuance of prescriptions for fictitious persons.
Dr. Lawrence N. Breene, Sharon, because of issuance of prescriptions for fictitious persons.
Dr. Paul L. Bruner, Oil City, because of issuance of prescriptions to persons who had not solicited or received prescriptions or had received any medical attention from said physician.
Dr. Andrew W. Goodwin, Oil City, because of issuance of prescriptions to persons who had not solicited or received prescriptions or had received any medical attention from said physician.
Dr. John L. Hadley, Oil City, because of issuance of prescriptions to persons who had not solicited or received prescriptions or had received any medical attention from said physician.
Dr. Orlando A. Jones, Sharon, because of issuance of prescriptions for fictitious persons.
Dr. Robert Mehler, Sharon, because of issuance of prescriptions for fictitious persons.
Dr. Norman C. Mills, Clarion, Pa., because of issuance of prescriptions for fictitious persons.
Dr. Roy R. Norton, Sharon, because of issuance of prescriptions for fictitious persons.
Dr. W. Forest Sharpnack, Oil City, because of issuance of prescriptions to persons who had not solicited or received prescriptions or had received any medical attention from said physician.
Dr. Ellis A. Smith, Sunbury, because he delivered prescriptions over to a druggist in order that the druggist might cover a shortage of liquor withdrawn by him under his permit which said druggist had dispensed illegally.
Dr. Elmer B. Staley, Freeport Road, Birdville, because of illegal disposition of prescription forms 1403, in that fictitious names were used in place of bona fide patients and whisky withdrawn from drug stores for other than medicinal purposes on this physician's prescriptions.
Dr. Richard L. Williams, Hautzdale, because permittee obtained whisky from retail drug store at Harrisburg, Pa., by express, by sending a number of prescriptions to this drug store by mail and thereby keeping a supply of whisky on hand in his office at all times, for the purpose of dispensing to persons requesting it.

Philadelphia

Personal.—Jefferson Medical College awarded the Corinna Borden Kenn Research Fellowship for the ensuing year to Dr. Aaron Capper, who will devote his time to research in clinical pediatrics in Vienna.——Dr. Orlando H. Petty was elected national commander of the Legion of Valor at the meeting in this city, October 6.

Society News.—The thirty-fourth annual meeting of the Association of Military Surgeons of the United States opened at the Bellevue-Stratford Hotel, October 14. Dr. Wilmer Krusen welcomed the guests; Dr. John B. Deaver introduced the foreign delegates and Rear Admiral Edward R. Stitt, U. S. Navy, presided. Among the speakers were Dr. George E. de Schweinitz, formerly President of the American Medical Association, Surg. Gen. Merritte W. Ireland, U. S. Army, and Dr. Hobart A. Hare, president, Philadelphia College of Physicians.

TENNESSEE

Personal.—Dr. Neuton S. Stern has been appointed editor of the *Memphis Medical Journal*, effective in December, to succeed Dr. John A. McIntosh, Jr.

Hospital News.—The Baptist Hospital, Madison Avenue, Memphis, is constructing a new wing.——The new wing to the Methodist Hospital is almost completed.——The old St. Joseph's Hospital at Memphis has been renovated and a new $500,000 addition opened.

Society News.—The Memphis and Shelby County Medical Society will be the guest of its president, Dr. Joseph A. Crisler, Sr., at a picnic and barbecue at "Duntreath Farm," October 30, two miles south of Forest Hill; there will be games and contests and other forms of amusement.

Students' Night.—The students of the University of Tennessee College of Medicine, Dentistry and Pharmacy and the respective faculties met in Rogers Hall, September 24, at the opening of the school year before the "eternal grind" began in order to get acquainted. The mayor, Mr. Rowlett Paine, extended a cordial welcome to the student body; trustees of the university, the vice mayor of the city and other prominent citizens were present. Music was provided by the students and refreshments were served. This is the first time in recent years, the *Memphis Medical Journal* states, that such a gathering has taken place.

UTAH

Major Gurney Honored.—Physicians of Salt Lake City recently gave a farewell banquet to Major Samuel C. Gurney, M. C., U. S. Army, who left that city for a tour of duty in the Panama Canal Zone. Major Gurney had been assigned to the one hundred and fourth division O. R. for about four years and largely as a result of his efforts Utah has attained the highest per capita membership in the medical officers reserve among the states in the union. In appreciation of this service, a "handsome ring" was presented to Major Gurney.

VIRGINIA

Personal.—Dr. Henry S. Daniel, Jr., has been elected mayor of Louisa.——Dr. Charles L. Outland, Greenville, N. C., has been appointed chief medical inspector of the Richmond Health Department, to succeed Dr. Bathurst B. Bagby.

Birth Rate Declines.—There were 3,233 fewer births in Virginia in 1925 than in 1924. The number of white births decreased 2,297, and the colored births decreased 936. The birth rate for the state as whole was 24.62 per thousand of population. The birth rate in nine cities exceeded the general birth rate of the state; these cities were Radford (37.54); Fredericksburg, Roanoke, Winchester, Buena Vista, Clifton Forge, Danville, Alexandria and Bristol (26.85). Among the counties, Buchanan county had the highest birth rate (39.24). Among the city units, Newport News had the lowest birth rate.

"Eye Specialists" Swindle Another Woman.—A physician from Leesburgh has forwarded an account of "two dapper young gentlemen posing as expert oculists" who swindled a young woman some months ago on the pretext of performing an operation for the removal of a cataract, and who have appeared again in the same community recently. They gave their address as Washington, D. C., and their names as Dr. Harris and Dr. Miles. The first victim was a patient of our correspondent who says she had no signs of a cataract; another person in that county was thus swindled out of $200 (THE JOURNAL, Aug. 14, p. 498; Aug. 21, p. 599).

Hospital News.—St. Christopher's Hospital, Norfolk, is to be discontinued as a hospital and operated as a clinic. The major medical and surgical cases will be admitted to general hospitals in the city.——Dr. Cornelia W. Segar has been appointed medical director of the Piedmont Sanatorium to succeed the late Dr. Harry G. Carter.——The president of the Central District Medical Society, Dr. Paulus A. Irving, at the September meeting of the society in Farmville, turned the first ground in the erection of the Southside Community Hospital which has been made possible by the Commonwealth Fund of New York; the hospital will have fifty beds.——Dr. James L. Early has resigned from the staff of the Mathieson Hospital, Saltville, and will move to southwestern Virginia to engage in general practice.

Society News.—The physicians of the Clinch River Valley were invited to meet at Norton, September 22, to discuss the organization of a medical society to include all the counties in the valley; a subscription dinner was held in the evening.——Dr. William H. Higgins, Richmond, addressed the semiannual meeting of the Southwestern Virginia Medical Society, September 9, on "Some Circulatory Disturbances in the Postoperative Patient"; Dr. Zeb V. Sherrill, Marion, was elected president; Dr. Julius D. Willis, Roanoke, vice president, and Dr. Elbyrne G. Gill, Roanoke, secretary, reelected.——Dr. Benjamin A. Pope, Newsoms, has been elected president of the Southampton County Medical Society for the ensuing year; Dr. James A. Grizzard, Drewryville, vice president, and Dr. William T. McLemore, Courtland, secretary.——Dr. William R. Martin, Charlotte Court House, has been elected president of the Charlotte County Medical Society; Dr. Ray A. Moore, Phenix, vice president, and Dr. Joseph B. Bailey, Keysville, secretary-treasurer.——At the recent organization meeting of the Clinch Valley Medical Society, Dr. Claude B. Bowyer, Stonega, was elected president; J. M. Milburn Dougherty, Nickelsville, vice president, and Dr. Jesse C. Sutherland, Clintwood, secretary-treasurer.——Dr. Alex F. Robertson, Jr., Staunton, has been elected president of the Medical Association of the Valley of Virginia; Drs. Charles O. Dearmont, White Post, James H. Deyerle, Harrisonburg, and German S. Hartley, Clifton Forge, vice presidents, and Dr. Harry Gardner Middlekauff, Weyers Cave, secretary.

WISCONSIN

Dean Jermain Resigns.—Dr. Louis F. Jermain, for fourteen years dean of the Marquette University School of Medicine, Milwaukee, tendered his resignation at a recent meeting of the board of trustees and was elected dean emeritus.

Personal.—Dr. Lester McGary has been appointed pathologist at the Madison General Hospital, Madison, to succeed Dr. R. McHalback, who has accepted a position in Pittsburgh.——Dr. John G. Hoffmann has been appointed health officer of Hartford to succeed Dr. Ezra H. Rogers, who has gone to Milwaukee to engage in private practice.

Proposed New Building Approved.—The regents of the University of Wisconsin have authorized the location and preliminary plans, it is reported, for a new $600,000 building to be erected near the Wisconsin General Hospital, Madison, and to house various medical departments; this building is said to be the first of a group which will be erected in the vicinity of the general hospital and which will eventually make possible a full term medical course at the university.

Society News.—Drs. Alton Ochsner and Frank Mason addressed the University of Wisconsin Medical Society, Madison, October 15, on "The Prevention of Peritoneal Adhesions," and Chauncey D. Leake, Ph.D., began a series of short talks on "The Development of Medical Ethics."——Dr. Henry J. Suttle, Viroqua, has been reelected president of the Vernon County Medical Society for 1927.——Dr. Leslie H. Redelings, San Diego, Calif., addressed the Marinette-Florence County Medical Society, Peshtigo, September 23, on "Heart Block," illustrated with lantern slides.——Dr. William E. Fawcett addressed the Ashland-Bayfield-Iron County Medical Society, recently, on "Pneumothorax."——Dr. Joseph F. Smith, Wausau, president, state medical society, addressed the Fourth Councilor District Medical Society, August 31, on "Periodic Examinations of the Apparently Healthy."——Dr. Oscar Lotz, Milwaukee, addressed the Ninth Councilor District Medical Society, September 30, Wausau, on "Main Stays in the Diagnosis of Pulmonary Tuberculosis," and Dr. William S. Middleton, Madison, on "Pitfalls in the Diagnosis of Pulmonary Tuberculosis."

GENERAL

Importation of Meat from Certain Countries Prohibited.—To prevent the introduction of rinderpest and foot-and-mouth disease into the United States, the Secretary of Agriculture has promulgated an order, effective, Jan. 1, 1927, to the effect that no fresh or frozen beef, veal, mutton, lamb or pork shall be permitted entry into the United States from any region in which either of the said diseases exist.

Medical Journal in Esperanto.—Three numbers of the *Internacia Medicina Revuo*, a medical journal published in the Esperanto language, have been published. The journal is issued in Lille, France, under the editorship of Professor Vanverts and others, who include, it is reported, Professors Pirquet of Austria, Richet of France, Vierodt of Germany, Fujinami of Japan, Bujwid of Poland, Shcherbank of Russia, and Dr. Macky of Wellington, New Zealand.

Journal of Preventive Medicine.—The first number of "The Journal of Preventive Medicine," which will be published bi-monthly by the John McCormick Institute for Infectious Diseases, Chicago, under the editorship of Edwin O. Jordan and other eminent men, has been received; it has five articles and 123 pages. Judging from this issue field men and laboratory men in preventive medicine, as well as general medical readers will wish to look over the subsequent issues.

Loan Fund to Help Candidates.—The National Board of Medical Examiners announces that a revolving loan fund has been established through the generosity of one of the philanthropic foundations; worthy candidates before the board may borrow approximately one half of the entire cost of the series of examinations, making it possible for those who use the fund to take the examinations for a total expenditure of about $35 as compared with the present total of $80. Loans will be made for one year without interest, and may be extended if necessary for another two years with interest at 6 per cent. Applications for loans should be made prior to taking the examination in part III to the secretary, Dr. John S. Rodman, 1600 Walnut Street, Philadelphia.

Vaccine for Rocky Mountain Spotted Fever.—The U. S. Public Health Service states that the preventive action of the Spencer-Parker tick vaccine for Rocky Mountain spotted fever has been enthusiastically received in the affected areas. In a group of several hundred sheep herders about half of whom were vaccinated, last spring, no cases of spotted fever occurred in the vaccinated, whereas eight cases occurred in the unvaccinated group. Before the vaccine was first used, five cases of spotted fever occurred among laboratory workers, all of whom died. By the spring of 1926, thirty-four laboratory and field workers had been vaccinated, and among them there were four cases of the fever; they all recovered, one being a patient, aged 62. Previous to this time there was no record of any persons of 50 years of age ever recovering from the disease in the Bitterroot Valley, Mont.

Association for Physical Therapeutics.—The first annual convention of the New England Association for Physical Therapeutics, Inc., will be held at the Copley Plaza Hotel, Boston, October 26-28. The association was founded in 1905; if this convention is successful, it will probably become an annual event. Papers will be limited to twenty minutes; discussions to three minutes. There will be exhibits of apparatus, trips about the city and suburbs, and a banquet Wednesday evening ($3.50 per plate). Among the speakers will be Drs. Herman Goodman; Richard Kovacs; Peter J. Kesseler; Frank T. Woodbury; William B. Snow; James T. Gwathmey; Hedley V. Robinson, Montreal; William Martin, Atlantic City, N. J.; George I. Forbes, Burlington, Vt., and Dr. James S. Stone, president of the Massachusetts State Medical Society.

Pan-American Conference of Directors of Health.—Sixteen delegates from North and South American countries attended the first Pan-American Conference of National Directors of Public Health, held in Washington, D. C., September 27-29. The visitors were welcomed by the undersecretary of state, by the director general of the Pan-American Union, by the director of the Pan-American Sanitary Bureau, and by the Surgeon General, U. S. Public Health Service. The purpose of the conference was to exchange information about public health and to further American cooperation in sanitation and the prevention of the spread of disease. The delegates inspected the hygienic laboratory and thus were able to study methods of hygiene employed in this country. The sanitary code which has been recommended for adoption by all of the American republics was discussed at the conference as well as the prevention of plague, leprosy, malaria, yellow fever and many other topics, including child welfare, health education and the narcotic problem. Although this was the first officially organized Pan-American Conference of Directors of Public Health, Pan-American sanitary conferences have been held since 1889.

Tuberculosis Death Rate Here and in England.—The U. S. Department of Commerce has just released figures on the death rate from tuberculosis. The death rate from all forms of tuberculosis in the United States registration area of 1900 was lower for each age period for each sex in 1924 than in 1900. The amount of this decline in death rates ranged from 73 per cent for girls under 1 year of age to 37 per cent for girls aged 15-19 years. Similar declines are recorded in England and Wales. A comparison of the 1924 death rates from tuberculosis (all forms) for England and Wales with the corresponding 1924 rates for the United States Registration States of 1900 reveals lower rates in the United States for each age period up to age 55 for each sex. The greatest percentage difference up to age 55 was for boys aged from 5 to 9 years, the respective rates for the two countries being 37 for England and Wales and 15 for the United States, the latter rate being 59 per cent lower than the rate for England and Wales. The least percentage difference up to age 55 was for women aged from 20 to 24, the respective rates for the two countries being 153 for England and Wales and 146 for the United States, the latter rate being 19 per cent lower than the rate for England and Wales. Comparisons of the tuberculosis death rates for the two countries for ages above 55 show much lower rates in England and Wales than in this country, so much lower, in fact, that apparently the only explanation is a tendency in England and Wales to certify at the older ages bronchitis as the cause of death instead of tuberculosis.

National Committee for the Prevention of Blindness.—The eleventh annual report of this committee notes that the first preschool eye clinic in this country was conducted during the year at 413 West Forty-Sixth Street, New York, under the joint auspices of the committee and the Clinton Neighborhood Conference, a cooperative organization composed of more than forty social agencies. The staff gave its services gratuitously. The number of children examined was seventy-three; no effort was made to have a large attendance, the object being to give each child as much time as was needed. During the year, twenty-nine sight saving classes for public school children were established, making the total now 234 in the United States. Sight saving classes have been established at the University of Cincinnati; Peabody College, Nashville, Tenn.; State Normal School, Ypsilanti, Mich., and at New York University. It is considered as evidence of the success of the movement for the prevention of blindness that only 11.5 per cent of the pupils in schools for the blind during the last year had been blinded by ophthalmia neonatorum, whereas when the committee was organized eleven years ago, 28 per cent of the children in the schools for the blind had lost their sight through this one cause. The committee distributed during the year without charge almost one-half million books, bulletins, folders, posters and so forth dealing with the prevention of blindness, and through lectures, motion pictures, convention exhibits and radio brought to the attention of a multitude of other persons methods of safeguarding the sight.

FOREIGN

Medical Lectures in English in Paris.—Under the auspices of the medical board of the American Hospital of Paris, a four weeks course of medical lectures will be given in May, 1927, by leading physicians in Paris with a view to an insight into the most interesting studies that are made in the French University. The lectures will be delivered in English in the afternoon and a preliminary program will be published shortly. For further information address the Medical Board, American Hospital of Paris, 63 Boulevard Victor-Hugo, Neuilly-sur-Seine.

Headquarters for Standardization of Medical Instruments.—A committee comprising physicians, manufacturers of instruments and prostheses and the Austrian bureau of standards has founded at Vienna a headquarters for standardizing and exhibiting medical instruments and apparatus and for consultation in regard to designing and construction. Twenty different specialties are each in charge of a different expert, and the tests will be made in the various official institutes. Profs. A. Durig and R. Kraus are the chief officials; the

address is Michelbeuerngasse 6, Vienna. A pamphlet has been published containing the replies to a questionnaire sent broadcast for suggestions for the innovation.

Deaths in Other Countries

Herbert William Page, consulting surgeon, St. Mary's Hospital, London, September 9, aged 81.——Dr. **C. França,** Lisbon, known for research in protozoology.——Dr. **L. Lucatello,** professor of clinical medicine at the University of Padua.——Dr. **G. Rioux,** Bordeaux, succumbed to fulminating septicemia from a scratch in applying a dressing to a child in the clinic. ——Dr. **Diego Tamayo,** Havana, who organized the public health service of Cuba under General Wood's administration in 1900, served as dean of the medical school, premier, in the cabinet, and founder of the monthly *Vida Nueva,* aged 73.

Government Services

Army Personals

Major Harry N. Kerns has tendered his resignation from the service.——Capt. Clyde C. Johnston has been ordered to Fort Bliss, Texas, for duty, and Capt. Paul S. Seabold to Fort Brown.——Major Alfred P. Upshur, medical corps, has been ordered to Panama Canal Zone for duty, effective about December 2; according to the New York *Times,* September 16, Major Upshur has resigned from the service; the resignation of Capt. John E. Stanton, medical corps, is also reported in the *Times.*——Major Robert D. Harden has been relieved from duty at the General Dispensary, Boston, and ordered to the Surgeon General's Office, Washington, D. C., for duty.——Major Robert P. Williams has been relieved from duty at Vancouver Barracks, Washington, and transferred to the medical field service school at Carlisle Barracks.

Navy Personals

Lieuts. Marvin M. Gould and Leo L. Davis have been found qualified for promotion to the rank of lieutenant commander, and Lieut. (j. g.) William R. Manlove, Jr., to the rank of lieutenant.——The following medical officers have resigned from the service: Lieut. (j. g.) Victor W. Hart, U. S. S. *Nevada,* and Lieut. (j. g.) Ralph R. Ploughe, U. S. Naval Hospital, League Island, Pa.——Comdr. Edward C. White has been transferred for duty from the naval hospital, San Diego, to the U. S. S. *Arizona,* and Comdr. Frederick E. Porter from the U. S. S. *Arizona* to the naval hospital at Mare Island, Calif.; Comdr. Charles M. Oman has been transferred from the marine detachment, American Legation, Peking, China, to the receiving ship at San Francisco, and Lieut. Comdr. Gilbert H. Mankin from the navy department to the naval hospital, Washington, D. C.——Lieuts. (j. g.) Herman D. Scarney, navy yard, Boston, and Carroll O'Rourke, marine recruiting station, Buffalo, have resigned from the service.——The following medical officers have been found qualified for promotion to the rank of lieutenant commander: Lieuts. Francis W. Carll, William P. Mull, Fred W. Granger, Cary D. Allen and Hillard L. Weer, and Lieut. (j. g.) Gilbert E. Gayler has been found qualified for promotion to the rank of lieutenant.——Lieut. Comdr. Richard C. Satterlee has been recommended transferred from San Diego to the U. S. Naval Station at Guam, and Lieut. Comdr. Martin Donelson from the naval hospital, Boston, to the first brigade, U. S. Marines, Haiti; Capt. David C. Cather from the naval supply depot, Brooklyn, to the bureau of medicine and surgery at Washington, D. C.; Lieut. Comdr. Heber Butts from the U. S. S. *Rigel* to the naval hospital, San Diego; Comdr. Frederick W. S. Dean from the U. S. S. *Idaho* to the navy yard, New York, and Lieut. Comdr. Alma C. Smith from the U. S. S. *Langley* to the naval hospital, Boston.

U. S. Public Health Service

Acting Asst. Surgs. Frank S. Fellows, Algoma, Wis., and Ralph B. Snavely, Sterling, Ill., have been assigned to duty at U. S. Marine Hospital No. 5, Chicago.——Surg. John H. Linson was directed, September 21, to proceed to such places in the state of Florida as was necessary for duty in connection with the recent hurricane disaster.——The following physicians have been promoted and commissioned in the grade of passed assistant surgeon: Henry A. Rasmussen, Guy H. Faget, William Y. Hollingsworth and Octavius M. Spencer.

Plan to Eliminate Unnecessary Roentgen-Ray Examinations

The U. S. Veterans' Bureau Medical Service recently issued an order with a view of eliminating unnecessary duplication of roentgen-ray examinations of patients referred from regional offices to hospitals, and vice versa. The plan, in part, is to transmit all roentgen-ray films to the receiving hospital when a patient is transferred from a regional office to a Veterans' Bureau hospital for treatment. The physicians at the receiving hospital will use the films to the fullest possible extent in connection with the study of the patient and then retain the films in the hospital files. When a patient is discharged from a hospital to one of the regional offices, a complete set of roentgen-ray films, provided they have been taken during his stay in the hospital, will be transmitted to the regional office, and the physicians there will use the films to the fullest extent to determine what measures to pursue for the patient's relief, provided he is entitled to it, and these films will be retained in the files of the regional office concerned. Films will be transferred when a patient is transferred from one hospital to another, also when a claimant changes his residence from the jurisdiction of one regional office to another. It is believed that the fluoroscope could be utilized to a greater extent for determining the progress of a patient and that thereby the use of films may be reduced. Roentgen-ray equipment has been installed in the following regional and suboffices; this list does not include the many veterans' hospitals which also have roentgen-ray equipment:

Boston	Kansas City, Mo.
New York	Des Moines, Iowa
Buffalo	Omaha
Newark, N. J.	Wichita, Kan
Philadelphia	Minneapolis
Pittsburgh	Sioux Falls, S. Dak.
Washington, D. C.	Denver
Baltimore	Albuquerque, N. M.
Atlanta, Ga.	Salt Lake City
New Orleans	Casper, Wyo.
Cincinnati	San Francisco
Cleveland	Los Angeles
Indianapolis	Seattle
Louisville, Ky.	Dallas, Texas
Chicago	Little Rock, Ark.
Detroit	Oklahoma City
Milwaukee	San Antonio, Texas
St. Louis	

Changes in Veterans' Bureau Personnel

The *Medical Bulletin of the Veterans' Bureau* reports the following changes in personnel:

Dr. Asa J. Dion (intern), appointed at hospital no. 44, West Roxbury, Mass.
Dr. George M. Gehringer, appointed at hospital no. 55, Fort Bayard, N. M.
Dr. William C. Gibson, transferred from Area E, San Francisco, to hospital no. 84, Algiers, La.
Dr. Harrison A. Greaves, resigned hospital no. 53, Dwight, Ill.
Dr. Frank J. Herbig, transferred from hospital no. 41, West Haven, Conn., to hospital no. 102, Livermore, Calif.
Dr. John W. Kellam, reappointed at hospital no. 102, Livermore, Calif.
Dr. Elizabeth B. Reed, resigned at central office.
Dr. Thomas J. Seale, resigned at hospital no. 48, Atlanta, Ga.
Dr. Herbert C. Watts, transferred from hospital no. 102, Livermore, Calif., to Area E, San Francisco.
Dr. Kenneth L. Weber, resigned at hospital no. 78, North Little Rock, Ark.

REGIONAL OFFICES

Dr. Lyman A. Burnside, resigned at Chicago regional office.
Dr. John P. Howser, appointed at Cincinnati regional office.
Dr. Salvatore Lojacono, resigned at Chicago regional office.
Dr. Aaron A. McKelvey, appointed at Pittsburgh regional office.
Dr. Lewis B. Robinson, transferred from Houston regional office to San Antonio, Texas, regional office.
Dr. Richard T. Yoe, resigned at Louisville, Ky., regional office.

Captain Lowndes Promoted to Rank of Rear Admiral

Capt. Charles Henry T. Lowndes has been promoted to the rank of rear admiral, medical corps, U. S. Navy, to succeed the late Rear Admiral George H. Barber. The promotion was based on the recommendation of a special navy board appointed for the purpose of selecting a successor to Admiral Barber, and the President approved the board's recommendation. Captain Lowndes was originally appointed to the naval academy from Baltimore; he was commissioned in the medical corps in 1889, and in 1918 was assigned to duty as medical aide to the commandant, third naval district, New York, and the following year became commandant of the naval hospital, New York. In 1923, Captain Lowndes was made commanding officer of the naval hospital at Washington; in 1924, he was in charge of the naval dispensary at Washington, and in 1925 was made medical director of the naval hospital.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 2, 1926.

The Sterilization of Mental Defectives

In *Mental Welfare,* Dr. A. E. Tredgold, the leading authority on mental deficiency, discusses the sterilization of mental defectives, a subject of controversy recently in the press. Dr. Tredgold begins by pointing out that for sterilization an act of parliament would be needed and is out of the question in the present state of public opinion. Those who advocate sterilization do so for three main reasons: 1. By preventing propagation, sterilization would produce a marked decrease in mental deficiency. 2. By allowing the discharge of many patients now in institutions, it would lessen their cost to the community. 3. This liberty would increase the happiness of the defectives.

The first appears to be the principal motive actuating those responsible for the propaganda. A writer in the *Spectator* recently described this as "the only effective method of diminishing the now ever increasing load of mentally diseased persons." But Dr. Tredgold considers that the existence of such increase is unsupported by any reliable statistics. He admits that although a small proportion of cases of defect are not in any way due to inheritance, but are the result of accidental injury or disease of the child's brain, yet the great majority of cases are inborn and due to inheritance. It has therefore not unnaturally been assumed, by those who have no great experience with defectives and who are unacquainted with the subject of heredity, that the defective must be the offspring of defective parents. But this is not so: the defect of a child may be due to inheritance without its parents being similarly defective. Although some writers, chiefly American, have attempted to prove that mental deficiency is due to absence in the ancestral germ cells of certain components and that transmission is mendelian, they have not succeeded. On the contrary, there is every reason to conclude that mental defect is not to be regarded as resulting from absence in the seed of a definite item, but as due to a state of incomplete mental development consequent on the seed having a diminished capacity for growth, or what is called defective developmental potentiality, or a vitiation of the ancestral germ cells. The amount of this vitiation, however, varies probably not only in the germ cells of different persons of the same stock but also in the germ cells of the same person. Moreover, there is reason to think that even with vitiated germ cells the condition of the offspring is to some extent influenced by the antenatal environment. The result is that, although the majority of mental defectives come of families whose germ cells have undergone vitiation, this vitiation shows itself in many other ways than mental defect, such as by dementia praecox or other forms of dementia or by certain forms of insanity. In some persons this vitiation may be so slight and the environment so favorable that it is not manifested at all and they pass through life apparently normal. Nevertheless it is probable that all these persons are carriers of mental defect, as a chance combination of adverse circumstances may at any time so increase the impairment of their germ cells as to prevent the normal development of their offspring. Dr. Tredgold finds that the proportion of defectives who are the offspring of mentally defective parents is extremely small. It follows that if every defective in existence a generation ago had been sterilized, the number of defectives today would not have been appreciably diminished, and that if every defective now existing were to be sterilized, the result a generation hence would be insignificant. In short, in order to produce any marked decrease in the total number of defectives it would be necessary to sterilize not merely defectives but also "carriers" (persons suffering from germ vitiation). This is impossible. Moreover, even if it could be done, the factors which initiate that impairment of germ cells which culminates in mental deficiency would be still in operation, and if every carrier in existence today were eliminated, a fresh crop would soon arise. Dr. Tredgold considers that the eradication of mental defect must be slow and gradual and be achieved only by removal of those adverse factors in the environment which bring about germ impairment and by education of public opinion toward the eugenic ideal. However, he does not lightly regard propagation by defectives, which undoubtedly takes place. This is all the more serious, as such progeny are almost invariably subnormal and often actually defective. But the disadvantages of their sterilization would outweigh the advantages.

Dr. Tredgold does not accept either of the other two main reasons given above. Defectives liberated from institutions would have to compete against their more fortunate fellows in a market already oversupplied with labor. Before the establishment of institutions, they lived a harried life between the workhouse, refuge and the prison, and cost the community a considerable sum. As to the third reason, that sterilization by permitting their discharge from institutions would promote their happiness, this could apply only to the minority who resent control, but these are the very persons who are insusceptible of social adaptation, for whom the supervision against which they fret is necessary.

Forceps Left in the Abdomen After Operation

A coroner's inquest was held on the body of a married woman, aged 47, who was admitted to St. George's Hospital in September, 1923, for immediate operation. This was done by a surgeon now in New Zealand. She recovered. The ninth of this month, she told her husband that she could feel a piece of wire in her inside. Two days later she was taken to St. George's Hospital, and while there he received an anonymous letter which said, "I think it right to tell you that I heard a night nurse telling another that your wife had a pair of scissors left in her stomach after the operation." On the fifteenth another operation was performed, and a pair of Littlewood's forceps were found in the pelvis. They were 6 inches long and were broken, but their continuity was preserved. She progressed favorably at first, but died, September 17. A resident assistant surgeon of St. George's Hospital stated in evidence that her husband was not informed about the forceps because it was thought that the patient would probably recover, and it was not thought advisable to tell him at the time. Afterward the earliest opportunity was taken of informing him. There was no desire to conceal the fact. Dr. H. B. Weir, who made the necropsy, stated that death was due to peritonitis following operation for removal of the forceps. He had read of such cases but had never seen one. When he was a student at St. Thomas' Hospital, the custom was to hold a sister responsible for seeing after all the instruments after an operation. The surgeon, however, was responsible for everything, and could not condone a surgeon leaving a pair of forceps behind. The coroner said that it was very curious that the deceased had been able to walk about with this huge pair of forceps in her body. He did not know that one could blame the hospital authorities for not telling the husband about the forceps having been missed, because it might have increased his worry; but he was glad to find that they did not withhold the fact altogether. The coroner had made inquiries at other hospitals regarding the practice adopted, because it was not the first case he had heard of. He remembered a distinguished surgeon doing the same thing. He found that the practice at every

hospital was that an assistant was responsible for the instruments, counting them before use and afterward, and reporting that all was correct, but that responsibility rested with the surgeon himself. It had been laid down in law that the responsibility was the surgeon's, and one could not help feeling that this was a sort of thing which should not happen. It could not be said that this death was due to an unavoidable accident; it was due to an avoidable one—overlooking a pair of forceps. While it was negligence, no one could say that it was gross negligence. The coroner recorded the following verdict: "Death was due to peritonitis following an operation for the removal of a pair of artery forceps negligently left behind by a surgeon, during an operation for removal of a cyst, and I further say that the said negligence was not gross and culpable."

Fashion and Health

A striking tribute to the hygienic value of modern fashions is paid by Dr. F. N. K. Menzies, health officer of the London County Council, in his report for the last year. He finds that one of the most gratifying results of the school medical service is the great increase in personal cleanliness. He has no doubt that the arduous work of the school nurses has greatly helped in the revolution in fashion that has taken place. Dame Fashion almost appears to have taken counsel with Lady Hygeia. Formerly in many ways the vagaries of feminine modes struck deeply at the roots of health and sapped the vitality of girls and young women. They dictated the compression of vital organs, the constriction of the circulating organs and the limitation of freedom of movement. The result was seen in prevalent deformities and diseases. But now the disappearance from the dress of girls of constricting devices, such as corsets and garters, has had a great effect in improving both physique and health. Chlorosis has practically disappeared with the corset, although rife within the memory of the present generation. Long skirts trailing in the mire are a mere memory. And now the growing custom of cutting short the hair of girls is of hygienic advantage. The health officer might have referred also to the low dresses now worn by women, with the result that the skin of the neck and upper part of the chest show the effects of exposure to the sun, thus securing phototherapy.

Plans for the Treatment and Study of Epidemic Encephalitis

In the house of commons, Mr. Neville Chamberlain, replying to a question on the subject, said that the provision of suitable accommodation for persons suffering from the after-effects of epidemic encephalitis was receiving his careful attention. An experimental unit for the treatment of 100 cases has already been opened near London. A certain number of persons certified under the lunacy acts are suffering from the after-effects of the disease. Arrangements have been made to treat them in one psychopathic hospital, so that the study of the disease may be concentrated. A measure has also been introduced into parliament to amend the mental deficiency act so as to facilitate the admission into mental deficiency institutions of cases suitable for treatment therein.

The Welfare of the Blind

The sixth report to the ministry of health of the advisory committee on the welfare of the blind shows that an increase of the blind is to be expected, owing to the natural increase of population. March 31, 1925, the blind population amounted to 42,140, a proportion of one blind person to every 911 of the general population. Blindness is slightly more prevalent among males than among females, in consequence of the greater risks to which the former are exposed in industry. Among the suggestions made by the committee are the following: 1. Local health authorities, in cooperation with voluntary agencies, should survey the position as regards the unemployable blind and consider policies for dealing with them according to a definite policy of assistance. 2. It would not be in the best interests of the blind to introduce a system of payment in workshops which had no relation to earning capacity, but the present piecework basis should be retained. 3. Much could be done to reduce the losses of workshops for the blind by good salesmanship and by a system of cooperative selling.

PARIS

(From Our Regular Correspondent)

Sept. 22, 1926.

The Antituberculosis Crusade in France

The French minister of public health will open officially, September 27, a sanatorium for tuberculous patients which is of an entirely new type in France. It is located in the high plateau region of Passy-Praz-Coutant, near Sallanches, in Haute-Savoie, just opposite the Mount Blanc chain, at an altitude of 1,250 meters. Passengers for the sanatorium are carried in cars suspended from an electric cable traversing the valley. The sanatorium is intended for persons in moderate circumstances. Most institutions hitherto have been either free, for the poor, or expensive, for the rich. The new institution consists of a collection of châlets containing each from six to eight rooms, with private porches for air treatment. The châlets are grouped about the buildings devoted to the medical and the administrative services. There is a pavilion reserved for patients who need special care. All of the ninety-two beds became occupied almost immediately after the sanatorium was opened. It was planned that the life of the individual patients should be organized according to their particular tastes, as it was thought that that would present more favorable psychic conditions than the atmosphere of large crowded sanatoriums.

In spite of the addition of this new unit, the creation of means of defense against tuberculosis is progressing but slowly this year. The lack of state funds and of subscriptions from private individuals is the primary cause. At present, there are in all France only sixty-eight sanatoriums for patients with pulmonary tuberculosis, with a total of 6,848 beds, of which around 3,000 are in private institutions. There are fifty-two marine sanatoriums for cases of surgical tuberculosis, with 12,241 beds; 111 preventoriums with 8,430 beds, fifteen hospital-sanatoriums with 3,001 beds; services reserved for the tuberculous in the general hospitals of forty-nine departments, with 2,588 beds; five heliotherapeutic establishments, with 236 beds, and six schools for reeducation after treatment, with thirty-five beds. There are 530 antituberculosis dispensaries distributed throughout the departments, but ten departments are without a dispensary. The number of beds in sanatoriums should correspond to the average annual number of deaths from tuberculosis. There are in Paris 13,000 deaths, which, according to the adopted basis of calculation, corresponds to 65,000 tuberculous patients. Instead of 13,000 beds, the department of the Seine has only 4,414.

Before the war, the antituberculosis crusade had been based on the program outlined in 1904 by Albert Robin and by Calmette, under the form which has since been adopted everywhere; namely, first the dispensary, to establish the diagnosis and to discover the tuberculous; second, the visiting nurses who superintend the sanitation of the home or lodging and the institution of prophylactic arrangements to protect the family, and, finally, the sanatoriums adapted to the various cases. But, owing to lack of funds, all the aforementioned institutions are making slow progress. In 1917, during the war, the arrival in France of the Rockefeller Mission transformed the whole situation. It chose as demonstration fields the nineteenth arrondissement of Paris and the department of Eure-et-Loir; namely, an urban type and a rural type. The

latter comprised four central dispensaries, located at Chartres, Dreux, Nogent-le-Rotrou and Châteaudun; twenty cantonal dispensaries, and a rural ambulant detecting service, provided with automobiles; three medical specialists and fifteen women public health workers. According to Dr. Bruno, the Rockefeller Mission expended, during the five years of its activities, more than 23,000,000 francs, in addition to the 18,000,000 disbursed by the American Red Cross, from 1917 to 1919.

The Rockefeller Mission had given an impulse to the work, and, on withdrawing from France, it relinquished to the Comité national de défense contre la tuberculose the duty of carrying on. In 1920, 36,000,000 francs was expended by France. In 1921, French organizations expended more than 63,000,000 francs in the crusade against tuberculosis, and, in 1922, more than 44,000,000 francs, of which the department of the Seine, alone, furnished 16,651,462 francs. In 1918, there were only seventy dispensaries in France. In 1924, the number had increased to 530, of which 439 send a monthly report to the Comité national (66 bis, rue Notre-Dame-des-Champs, Paris). The number of persons examined in 1918 in all the dispensaries taken together was 9,212, of whom 3,054 were recognized as tuberculous; the total number of visits made by the visiting nurses was 556,000. In 1921, there were 3,005 beds occupied by tuberculous persons; in 1924, there were 18,621. A marked lowering of the tuberculosis mortality has been the result. In 1890, the mortality ranged from 450 to 500 per hundred thousand inhabitants, according to the region; in 1924, the rate was from 250 to 280.

At the same time, the number of visiting nurses also has increased. In 1923, 232 pupils, of whom 180 were recipients of scholarships, were pursuing courses in the eight existing schools, and, by the end of 1923, 448 visiting nurses with professional training were serving in 498 dispensaries. At present, there are ten schools for nurses (two in Paris, two in Bordeaux, and one each in Lyons, Strasbourg, Lille, Nancy, Marseilles and Nantes.

Creation of a Radiophonic Institute

A radiophonic department has been created at the Sorbonne by the council of the University of Paris for the broadcasting of university courses. The secretary of the new department is M. Gaston Antignac, director of the university bureau of information, who was chosen following the publication of an important report, on his return from a tour of investigation in the United States, where he studied the application of radiophony to education.

JAPAN

(From Our Regular Correspondent)

Aug. 25, 1926.

Antihydrophobia Week

An antihydrophobia week was held in Tokyo and its neighboring prefectures, beginning August 1. In Tokyo, the public was instructed by lectures and motion pictures. As many as 6,082 dogs were inoculated; 5,389 dogs were brought in by the authorities; 701 stray dogs were caught; seven dogs were found infected with the disease. The metropolitan police will undertake such a survey every year in cooperation with prefectural authorities. According to the health department of the League of Nations, our government will send a medical expert to the International Antihydrophobia Congress to be held in Paris in April next year.

Nonoccupational Diseases and Injuries of Workers

Dr. B. Koimuna, medical expert in the society bureau of the home department, has published investigations on nonoccupational diseases and injuries of workers. In 471 factories employing 500 or more workers, 162,927 persons lost from work three or more days in a year because of nonoccupational diseases. Male cases of nonoccupational diseases were 179 per thousand workers, and the incidence was about double among female workers. The death rate was 4.3 per thousand, and 18.4 persons per thousand were discharged because of insurable diseases. Most of the tuberculosis occurred among textile workers, and next in order were workers in founding, printing and binding. According to the investigations of 8,608 male and 6,826 female workers in eleven factories (three cotton mills, three engine shops, three ship and car workshops, a wire workshop, and a fertilizer factory) in Tokyo Prefecture, twenty-five cases out of 930 injuries were from nonoccupational causes.

Subsidy for Natural Scientists

Seventy-seven medical research workers in colleges and laboratories, public or private, have been given stipends for this year.

Occupation and Mortality

According to the mortality statistics of various occupations in Japan, the tuberculosis death rate in 1924 was 19 per 10,000. The mortality of female workers in textile manufacturing was the highest of all, and next in order that of telephone girls and female clerks in the mail service. Among the dead of infectious diseases, the number of female servants was the largest, and next in order that of female machinery workers or telephone girls and female clerks in the mail service. The incidence was lowest among farmers and quarrymen. Cerebral hemorrhage and senile dementia raised the mortality rate of old male farmers, and next in order male merchants and hotel employees. Death from accident was most frequent among miners and next in order among male gas and electrical workers.

Results with the Improved Crematory

Dr. S. Koike has published his results with the smokeless and odorless crematory which he developed. For the first three trial months it took more than two hours to cremate an adult's body, but the time was decreased by degrees to an hour and twenty minutes, for time and fuel required for cremating a body vary more or less according to the skill of the operator. The average quantity of crude petroleum required for a cremation was 12.6 liters. The crematory is built of fire-brick, double doored in front and double walled in some parts. Instead of a chimney it has a smoke tunnel under ground to lead smoke into a ventilation tube by means of compressed air. In the lowest part of the furnace is a blast hole for air, and just above it a patent burner. Crude petroleum vaporized by compressed air burns there, and the heat may be raised to 1,500 or 1,600 degrees by the vapor regulator. Inside the smoke tunnel is a smoke condenser and a chemical apparatus for filtering out odors. (Other material on this subject was published in the Japan Letter, April 10, p. 1146, and in Current Comment, August 14, p. 495.)

Japanese Zoologist to Rockefeller Institute

Prof. S. Terao of the government fishery institute has accepted a call to the Rockefeller Institute to pursue studies on the "growth and breeding of animals." He is a young scholar well known in zoology and embryology, and an authority on the species of lobster and crab. He will leave Japan for America in October, and stay there for a year.

Nurseries in Factories

The metropolitan police investigated facilities for child care in ten factories employing 500 or more workers. Each nursery admits workers' children freely, except two of them in which children must pass a medical examination before

admittance. The institutions may be divided into three classes, A, B and C. A admits children from 100 days old to 3 or 4 years of age; B admits children from 4 years to school age; C combines A and B. The total number of children being cared for is 477 at present. The buildings are all of one story, light and clean, and well ventilated. The children in eight of them are given cakes, sweet potatoes, macaroni and the like between meals twice a day. Lunches have to be paid for by their parents in six of them. In three, a medical examination is held once a week, twice a month and once a month, respectively. A short time ago, the physician in one of them found many flatfooted children and cured them all by having them play outdoors in sand. The nurseries open at 5 or 7 in the morning and shut at 5 or 7 in the afternoon: this agrees with the work-hours of mother workers. (Of course, mothers are allowed to nurse their babies during their rest hours.) The staff consists of nurses and assistant nurses, and each factory physician superintends them.

PRAGUE

(From Our Regular Correspondent)

Oct. 1, 1926.

Serologic Products

The State Institute of Public Health of the Czechoslovak Republic, which is being constructed in cooperation with the International Health Board of the Rockefeller Foundation, has put on the market the first of its serologic products. Up to the present, serums and bacterial vaccines have been imported from other countries. As state control was not exercised over them, the products were of bad quality. The institute has not been given a monopoly for either production or distribution, but it hopes to take hold of the market on the basis of superior quality. It is estimated that the consumption of biologic products in this country amounts to about $200,000 annually. Because of lack of suitable products, serums and bacterial vaccines in general have not found as much use in this country as elsewhere. Consequently, a recent issue of the *Casopis Ceskych Lekaru* (Journal of the Czech Physicians) contained a full description of the institute and a brief outline of the theory and practice involved in the use of biologic products. The institute is under the direction of Dr. B. Feirabend, who obtained his education in the United States and his training chiefly in the laboratories of Dr. Park of New York. The products of the institute are lower in price than the imported ones.

Watering Places

Prof. V. Mladejovsky, the teacher of balneology at the Prague Czech Faculty of Medicine, spoke recently in Podebrady on the "Past and Future of Czechoslovak Watering Places." This problem is of especial importance to Czechoslovakia, which has many watering places, such as Karlsbad, Marienbad and Pistian. Here the problem is not only of medical but also of economic interest. The development of balneology can be followed in the history of a place like Karlsbad. In the second half of the middle ages bathing was the favored method of application of the waters and patients remained in the water as long as several days. Drinking of water from the hot springs came into use in the seventeenth century. At that time quantities of water were drunk by the patients, amounting to as much as 5 gallons a day. So at the end of the eighteenth century the beneficial influence of the water was expected from its high temperature. Consequently the volume of the water ingested was cut down and all possible care taken to prevent patients from losing the heat which was given to them in the water which they drank. The beginning of the last century brought in therapeutic nihilism, and the results of treatment in watering places were explained as due to autosuggestion. The end of the last century witnessed the birth of balneology as a science chiefly under the influence of French medicine. Balneology, however, did not penetrate into the medical faculties as much as other branches of scientific medicine, and all the balneologic research was concentrated in private institutes. The population living in the neighborhood of watering places has always found access to the water, but in general only the rich could travel long distances in order to find a watering place able to influence beneficially their ailment. It is true that the richest watering places have created a few places where the poor also could be afforded efficient balneologic treatment, but the places were so few as to be of no significance from the standpoint of public health. Balneology must be developed in the future into a real science, the first task of which is the scientific justification of methods that have been developed in balneology chiefly on empiric grounds. The new discoveries in physics have opened new perspectives in this direction which are very promising. The Czech medical faculty of Prague has created an independent chair of balneology and physical therapy, together with a scientific institute which has up to now had a modest equipment but promises possibilities for future development. This institute should become the center of scientific work also among the physicians specializing in practice in watering places. The state public health service, also, should supervise the sanitation of springs used for balneologic purposes and see that the waters are properly analyzed. The ministry of health has already drawn up a law pertaining to watering places. Each resort should develop a scientific institute of its own. A good example is Podebrady, where a scientific institute was opened on the occasion at which this address was presented. Another important question is the provision of means which would make the use of watering places available to those of modest and even smallest financial standing. Sanatoriums and hospitals built for this purpose by the state have accomplished a great deal, but it is expected that insurance provisions will include the cost of residence in a watering place among their regular benefits in a greater degree than they have done in the past.

Articles in Medical Periodicals

There is no plan for division of work among the ten or more Czech medical periodicals. The most pressing problem is the reporting of Czech current medical literature. The problem, according to Dr. A. Meska, is twofold: 1. Both the Czech and the foreign medical world should be supplied with bibliographies of all original articles published in the Czech language. 2. Results of the scientific work carried out in this country should be published in the scientific literature of the world. For the solution of the first problem, Dr. Meska proposes that a list of references to all original articles published in the country be printed in the *Casopis Ceskych Lekaru*. These bibliographies should be printed only on one side of the page and the pages should be perforated in order to facilitate their detachment. The pages could be cut into small clippings and pasted on cards. It is intended to exchange these reference pages among periodicals in Slavic countries and by translation to make them accessible to foreign nations. The second problem, of reporting local literature in foreign medical publications, can be solved only by cooperation of local workers with editors of foreign publications. This would facilitate the placing of summaries in the world's leading medical publications.

Vital Statistics for 1925

The state statistical institute has published a summary of data for 1925. Immediately following the World War the number of marriages increased considerably and attained its maximum in the year 1919, since which time a declining tendency has been observed. The minimum was reached in 1924,

but last year brought again an upward movement, which perhaps can be explained by greater stability and more prosperity. There were 9.19 marriages to each thousand inhabitants. The relative figure is considerably higher than the one obtained for the years preceding the World War. The year witnessed a decline in birth rate. The highest birth rate was attained in 1921, since which time a continuous decline has been noticeable. The present birth rate for the whole country is 25.65. The number of stillbirths and illegitimate births shows a declining tendency. The death rate has also shown some significant fluctuations in recent years. The lowest rate in the after-war period was obtained for the year 1923 (15.01); an increase was recorded for the following year (15.35), and last year showed again a reduction (15.18). The leading cause of death is old age (189 per hundred thousand). Next in order come pulmonary tuberculosis (173), tuberculosis of other organs (21), pneumonia (147), heart disease (128), and cancer (99). The infant mortality was lowest on record, 146.11 deaths per thousand live births. The excess of births over deaths was 9.9 per thousand inhabitants, which is the lowest one since 1921.

Death of Dr. Semerad

Dr. Jan Semerad, the chief medical officer of the ministry of health, died, August 28, a few weeks after the celebration of his sixtieth birthday. He obtained his medical degree in Prague in 1894, and specialized in internal medicine as an assistant of Professors Eiselt and Maixner in Prague. His publications in the field of clinical medicine are numbered more than twenty. For years he was editor of the *Casopis ceskych lekaru* (Journal of Czech Physicians), which always has been the leading medical periodical of the country. He developed also a weekly periodical devoted to the professional questions of Czech physicians. He became an honorary member of many Russian, Polish, Jugoslav and Bulgarian scientific bodies, and an officer of the French Academy of Medicine. He always showed an active interest in public health questions. One of his voluminous publications is a handbook of public health legislation in the Czech provinces. After the creation of the independent state of Czechoslovakia he was appointed chief medical officer of the ministry of health, in which position he remained until his death.

BERLIN

(From Our Regular Correspondent)

Sept. 25, 1926.

The Düsseldorf Session of German Scientists and Physicians

VITAMINS

At the recent Düsseldorf session of German scientists and physicians, Professor Stepp, director of the Medizinische Klinik in Jena, reported on the present status of vitamin research. The most important results have been attained in the field of fat-soluble vitamins. It has been shown that vitamin A occurs in brewers' yeast unassociated with other vitamins. If the yeast is fed to young rats, stoppage of growth and severe eye affections result from the lack of other vitamins. Owing to the same cause, night blindness may occur. The less protein a food contains, the sooner the manifestations associated with a lack of vitamin A appear. It is significant that in Denmark such manifestations, together with increasing mortality from tuberculosis and increasing child mortality, were noted when there was an increase in the amount of butter exported. Nature forms vitamin A in green plants. With the plants it enters animal bodies and is found again in the milk and the fat. Cod liver oil has the highest vitamin content, owing to the plankton diet of the cod. The relation of vitamin A to rickets and the compensatory effect of irradiation with ultraviolet rays are well known. Hart and Steenbock have shown that the laying capacity of hens may be considerably increased by irradiation with ultraviolet rays, and that in consequence the vitamin content of their eggs will be increased tenfold. Vitamin B is water-soluble and bears a relation to the function of the central nervous system. Its absence leads to severe paralytic manifestations, as in beriberi. Also the glandular organs suffer, and, furthermore, a less active combustion of carbon in the body will result. Vitamin C, the lack of which causes scurvy, is present in all the organs of animals and plants that take an active part in life processes. It is formed in large quantities in young plant sprouts and also in oranges and lemons; hence, the great importance of orange juice in the nutrition of infants. Heating to high temperatures damages vitamin C. Powdered milk, however, may retain a high vitamin content if proper care is taken in its preparation. A vitamin E also has been found, but it is not present in cod liver oil. Lack of this vitamin will cause the gonads in the man to deteriorate, and will cause premature birth in the woman. The substance is found in abundance in green plants. Thus, the more one eats of green plants—especially if uncooked—such as lettuce, and of raw fruit, the greater will be the amount of vitamins ingested. As a rule, there is no danger to be feared from the ingestion of an excess of vitamins.

SYNTHETIC REMEDY FOR MALARIA

Six years ago, Bayer 205, or germanin, was announced as a remedy in trypanosomiasis. This year's congress brought reports on a new remedy in malaria termed "plasmochin." Hörlein and Roehl, chemists of the Elberfelder Farbenfabriken, Professor Sioli of Düsseldorf, and Professor Mühlens of the Tropen-Institut in Hamburg, presented their observations. For many years, attempts have been made to find a substitute for quinine that would be cheaper than quinine, less bitter and with fewer by-effects. As a result of the collabororation of Dr. Schulemann, Dr. Schönhöfer and Dr. Winkler, a remedy was found which is related, in a sense, to quinine but which is, in other respects, a chemical substance synthetically produced and entirely independent of quinine. The first experiments were performed by Roehl in malaria of birds, the remedy having been introduced within the stomach of infected canary birds. The action of the remedy is to injure the parasites and check their development. Later, they succumb to the natural defense forces of the organism. Following the animal experiment, Sioli applied the remedy to persons who, after the method of Wagner von Jauregg (Vienna), had been artificially infected with malaria. Not only the efficacy but also the nonpoisonous character of the remedy were established. All the paralytic patients who had been inoculated with malaria and afterward treated with plasmochin by Sioli are still living. But, since the patients that were available in Hamburg were chiefly such as were suffering from recurrences and had been previously treated elsewhere with quinine, he went later to regions in which malaria is endemic; namely, to five different Balkan countries, and to Spain and Italy, and made everywhere essentially the same observations. Among other things, it was found that plasmochin is the first medicament known that will eliminate, with actual experimental certainty, the malarial crescents in the blood, within from five to seven days, and thus prevent the sexual propagation of the causative agent. In the early stages of Russian malaria the development of sexual types of the parasite was prevented. The therapeutic effect varies with the different types of malaria; in some instances in which the effect was not adequate, it was found desirable to add small quantities of quinine. It is important also that infants and children tolerate the remedy well. If it should prove feasible to destroy the types of the causative agent that are trans-

mitted exclusively by the anopheles mosquitoes, it may be possible not only to cure malaria in these regions but also to prevent its development.

NARCOTICS

A subject of general interest—poisons in articles that are consumed as luxuries—was treated by Professor Straub of Munich. While many articles of luxury serve, in part, to support life, those that contain poisons are used for the gratification which they furnish. The oldest poison to which man has been addicted is alcohol—a weak narcotic which produces slight paralyzing effects on the mental processes. After a single effective dose, one remains at least four hours under its influence. The paralyzing effect, which we expect from alcohol, we pay for consciously with a dulling of our intellectual and physical capacity. Overdosage and disregard of the duration of the effects of alcohol have, since the time of Noah, caused more or less discord and grief among mankind. A much more powerful poison used by man is opium, first used to secure gratification by the Arabs, though it does not seem ever to have been a social menace among the Mohammedans. They carried it to the East, where it fell into the hands of peoples and races that succumbed to its baneful influences—the Chinese and Magyars. The decomposition of morphine leads to more or less permanent harm to the organism. Another poison to which mankind is addicted is cocaine. Associated with the neuroses of the war and postwar period, the cocaine habit developed alarming proportions in Germany. Another narcotic preparation should be mentioned—hashish, the racial intoxicant of the orientals, the effect of which is approximately duplicated by absinth. Straub thinks that the stolid Germanic race need have no fear of the hashish poison. It will not, he thinks, conjure up for us any artificial paradise. In our hops, which we use in beer, we have, however, a substance that is related to hashish; in fact, the hop and the plant from which hashish is derived both belong to the nettle family. Hops contain an ethereal oil that is used in medicine as a mild soporific. But the instinct of mankind is now no longer seeking deadening and care-chasing substances but rather such as have a stimulating effect. Plants that have such an effect all contain caffeine: coffee, tea, kola and maté, or Paraguay tea. Caffeine acts on many organs of our body, exerting always a stimulating effect. It is a remedy for combating drowsiness, and for the increasing of intellectual capacity. That is doubtless why it is held in such high favor. Of all stimulants, caffeine is the least harmful for normal persons. Some cardiac patients, however, observe unfavorable effects from the small quantity of caffeine contained in the home beverage.

The Typhoid Outbreak in Hanover

The number of typhoid cases in the Hanover district has increased to 1,729. There have been 113 deaths. No further evidence has been discovered that would throw light on the cause of the outbreak.

Marriages

DUNLAP PEARCE PENHALLOW to Miss Katharyn McConnell Hitchcock, both of Washington, D. C., October 6.

JOHNS S. HELMS to Miss Dora Bonacker, both of Tampa, Fla., at Johnstown, Pa., in September.

THOMAS W. HARVEY, JR., Orange, N. J., to Miss Helen H. Cobb of East Orange, September 7.

CLARKE E. STEWART, Vincennes, Ind., to Miss Grace Beach of Danville, Ill., June 16.

JAMES FINLAY HUNTER, Turtle Creek, Pa., to Miss E. Maye Myers of Julian, October 7.

Deaths

Charles Edward Nammack, New York; Bellevue Hospital Medical College, New York, 1881; professor of clinical medicine, Cornell University Medical College; member of the Medical Society of the State of New York, and the American College of Physicians; formerly on the staffs of the Bellevue, St. Lawrence, St. Vincent's and the Gouverneur hospitals, New York, the Staten Island (N. Y.) Hospital and the St. Joseph Hospital, Yonkers; for many years consulting neurologist to the police department; aged 70; was found dead, October 4, of heart disease.

Arthur Henry Glennan ✠ Washington, D. C.; Howard University School of Medicine, Washington, 1879; Medical Department of the University of the City of New York, 1882; was appointed assistant surgeon, U. S. Marine Hospital Service in 1883; organized the quarantine service in Porto Rico in 1899; chief quarantine officer at Cuba during the yellow fever epidemic at Havana and on General Wood's staff, 1900-1902; detailed assistant surgeon general in 1903; aged 73; died, September 21, of cerebral hemorrhage.

James Moore King ✠ Nashville, Tenn.; University of Nashville Medical Department, 1896; professor of dermatology and electrotherapeutics, Vanderbilt University Medical Department; professor of chemistry at his alma mater, 1896-1910; professor of physics, University of Nashville, 1899-1904; engaged in post-graduate study in London and Paris, 1904-1906; secretary, section on dermatology and syphilology, Southern Medical Association, 1923-1925; aged 59; died, October 12, at New York.

Robert Avery Noble, Bloomington, Ill.; Northwestern University Medical School, Chicago, 1901; member of the Illinois State Medical Society; served during the World War; on the staff of the Brokaw Hospital; aged 49; died, September 27, of cerebral hemorrhage.

Henry Parks, Knobnoster, Mo.; Barnes Medical College, St. Louis, 1893; member of the Missouri State Medical Association; past president of the Johnston County Medical Society; formerly county coroner; aged 68; died, July 2, of pernicious anemia.

Morton M. Carrothers, Findlay, Ohio; University of Wooster Medical Department, Cleveland, 1872; for fourteen years a member of the city council; formerly member of the state legislature; aged 81; died, September 21, of pulmonary tuberculosis.

Francis Miles Chisolm, Washington, D. C.; University of Maryland School of Medicine, Baltimore, 1889; formerly associate professor of ophthalmology at his alma mater; served during the World War; aged 59; died, September 21, at Edgewater.

Harry MacVeagh Brown ✠ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1895; aged 53; for more than twenty years on the staff of the Presbyterian Hospital, where he died, October 4, of hemorrhage and gastric ulcer.

William Henry Callahan, Washington, D. C.; University of Buffalo Department of Medicine, 1902; for eighteen years connected with the government bureau of chemistry and agriculture; aged 49; died, August 29, at the Providence Hospital.

John Davidson Alexander, Tiptonville, Tenn.; University of Nashville Medical Department, 1898; member of the Tennessee State Medical Association; secretary of the Lake County Medical Society; aged 54; died, September 8, of heart disease.

Burton E. Paul ✠ Los Angeles; Washington University Medical School, St. Louis, 1907; served during the World War; aged 43; died suddenly, September 21, at the Los Angeles Pacific Hospital, of acute dilatation of the heart.

Russell Hoadly Wilson, La Ceiba, Honduras; Starling Medical College, Columbus, 1900; for many years superintendent of the United Fruit Company Hospital; aged 47; died, in September, of cerebral hemorrhage.

Henry Arnott, Hamilton, Ont., Canada; University of Toronto Faculty of Medicine, 1870; emeritus professor of the practice of medicine, University of Western Ontario Medical School, London; aged 82; died, August 4.

William Joseph Jones, Crozet, Va. (licensed, Virginia, under the Exemption Law of 1885); member of the Medical Society of Virginia; Confederate veteran; aged 85; died, September 15, following a long illness.

Jules L. A. Braunnagel ✠ San Antonio, Texas; St. Louis College of Physicians and Surgeons, 1883; on the staffs of the Santa Rosa Infirmary and the Robert B. Green Memorial Hospital; aged 69; died, September 21.

John N. Todd, Evansville, Ind.; University of Tennessee College of Medicine, Memphis, 1879; member of the Indiana State Medical Association; aged 65; died, September 30, at the Hayden Hospital, of septicemia.

Reuben D. Wenrich, Wernersville, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1864; medical superintendent of the Grandview Sanatorium; aged 84; died, September 25, of arteriosclerosis.

Harriet Wiley, Portland, Ind.; Northwestern University Woman's Medical School, Chicago, 1897; member of the Indiana State Medical Association; aged 56; died, September 25, of septic endocarditis.

George Warren Thompson ✠ Winamac, Ind.; Indiana Medical College, Indianapolis, 1873; Rush Medical College, Chicago, 1882; formerly county coroner; aged 77; died, September 26, of heart disease.

Otis Dole Butler, Independence, Ore.; Willamette University Medical Department, Salem, 1887; member of the Oregon State Medical Society; aged 64; died, in September, of septicemia.

George L. Merritt, Cherry Valley, N. Y.; Albany Medical College, 1873; member of the Medical Society of the State of New York; aged 73; died, September 15, of chronic nephritis.

Charles S. Mercier, New Orleans; Medical Department University of Louisiana, New Orleans, 1878; aged 72; died, September 24, of prostatic disease and hypostatic congestion of lungs.

Alfred H. Movius ✠ Jamestown, N. D.; University of Illinois College of Medicine, Chicago, 1906; aged 44; was killed, October 7, when his airplane dropped about 800 feet.

Ernest M. Wright, Summerville, Ga.; Atlanta Medical College, 1893; member of the Medical Association of Georgia; aged 55; died, August 18, of cerebral hemorrhage.

John Child Colby, Stanstead, Que., Canada; McGill University Faculty of Medicine, Montreal, 1902; mayor of Stanstead; aged 52; died, August 27, of heart disease.

John Kutch, Los Angeles; Medical College of Indiana, Indianapolis, 1879; aged 73; died, September 14, as the result of a cerebral hemorrhage, suffered six years ago.

John Martin Dillon, Sterling, Ill.; Hahnemann Medical College and Hospital, Chicago, 1903; aged 47; died, in September, at Seattle, of local suppurative neuritis.

Frank D. Millard, Milwaukee; Milwaukee Medical College, 1897; member of the State Medical Society of Wisconsin; aged 64; died, October 2, of chronic myocarditis.

Frank W. E. Snell ✠ Isle Au Haut, Maine; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1902; also a minister; aged 63; died, October 2.

Gladfelter Emanuel Spotz ✠ York, Pa.; Jefferson Medical College of Philadelphia, 1897; aged 50; died, September 21, of chronic interstitial nephritis.

Henry M. Templeton, Ames, Iowa; Louisville (Ky.) Medical College, 1877; member of the Iowa State Medical Society; aged 78; died, August 26.

Robert Patterson ✠ Turtle Creek, Pa.; University of Pittsburgh School of Medicine, 1913; aged 43; died, September 30, of chronic endocarditis.

Edward H. Wilson, Osceola, Iowa; Hahnemann Medical College and Hospital, Chicago, 1871; aged 92; died, May 26, at St. Andrew, Fla.

Oliver C. Murphy, Franklin, Ind.; University of Louisville (Ky.) School of Medicine, 1893; aged 64; died, September 19, of leukemia.

Amos S. Griffith, Rock Creek, Ill.; Eclectic Medical Institute, Cincinnati, 1873; aged 76; died, August 29, following a long illness.

David Judkins Dickson, Cincinnati; Miami Medical College, Cincinnati, 1905; aged 50; died, September 29, of heart disease.

William H. Rice, Spencer, Ind.; Medical College of Indiana, Indianapolis, 1882; aged 71; died, July 22, of valvular heart disease.

Adolphe R. Caron, Lombard, Ill.; Chicago Medical School, 1916; aged 44; died, September 22, following a long illness.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

NEO-REARGON NOT ACCEPTABLE FOR N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report.

W. A. PUCKNER, Secretary.

Neo-Reargon is a silver preparation advertised for the treatment of gonorrhea by the C. P. Chemical and Drug Co., Inc., New York. The C. P. Chemical and Drug Co. claims that Neo-Reargon is not a mixture but a "definite chemical compound," but does not make a definite statement of composition. In a circular "Neo-Reargon 'The Superior Reargon' What it is. What it does. Proof of its efficacy," the indefinite term "Glycoside Silver" is given as a synonym, and the preparation is stated to be "chemically combined Anthrachinonglucoside with Silver Nitrate of about 15 per cent. Silver content." The claim is made that the efficacy of the preparation is due to its "high ionic dissociation of silver." In an article by Klausner and Wiechowski (*Deutsche med. Wchnschr.* **51**:901 [May 29] 1925), who appear to have developed Reargon and Neo-Reargon, it is claimed that Neo-Reargon is a modification of Reargon (which is stated to be a combination of anthrachinonglucosides and silver gelatose) from which the gelatose has been omitted. These authors call the substance an anthrachinonglucoside silver compound which dissociates freely. The statements imply that Neo-Reargon is a true salt of silver and anthraquinone, a salt difficult even to imagine. The following report of the A. M. A. Chemical Laboratory shows that whatever Neo-Reargon may be, its silver is not in ionic or ionizable form:

"One original bottle (content 5 Gm.) of Neo-Reargon (C. P. Chemical and Drug Co., Inc., New York) purchased on the open market was submitted to the A. M. A. Chemical Laboratory for examination. The compound was claimed to be an anthraquinone silver glucoside, containing 15 per cent silver. The bottle contained a brown, odorless, powder which on dissolving in water had the general macroscopic properties of a 'solution' of mild silver-protein. A 'solution' of Neo-Reargon was quickly precipitated on addition of the following reagents: diluted hydrochloric acid; physiologic solution of sodium chloride; sodium sulphate 5 per cent; sodium tartrate 5 per cent and sodium nitrate 5 per cent. It was deemed advisable to determine the silver content and to test the relative silver ionization by the method of Pilcher and Sollmann as described in the U. S. Pharmacopeia X, under Mild Silver-Protein. The amount of silver found in the preparation was 15.29 per cent, which agrees with the claims. When tested by the yeast method, however, 0.5 Gm. of the material in 25 cc. did not inhibit gas formation, whereas the weakest mild silver-protein preparation reported in the Pilcher-Sollmann method inhibited gas formation when 0.150 Gm. was contained in 10 to 11 cc. From this test it is quite evident that the silver ionization is very weak.

"The distributor claims that the product throws down silver chloride when treated with sodium chloride. In view of the relatively small ionization of the silver as indicated by the yeast tests, it was decided to determine whether or not the statement of the manufacturer could be confirmed. Consequently some of the material which had been in solution for a few days was treated with a large excess of sodium chloride solution. After centrifugation, the supernatant liquid was removed by decantation and the residue washed repeatedly until the washings were free from chloride ions (Cl^-). The solid material was then treated with strong nitric acid. On diluting this, a very small residue was noted. The liquid after removal of the very small residue was tested for silver ions by the addition of diluted hydrochloric acid; a copious precipitate of silver chloride was formed. This showed that the statement of the manufacturer that silver chloride was precipitated on addition of sodium chloride could not be confirmed, as was to be expected in view of the small ioniza-

tion found. The preparation that was thrown down was evidently an organic silver compound.

"SUMMARY

"1. The silver content (of the Neo-Reargon specimen examined) found agreed with the claimed amount.

"2. The concentration of silver ions as determined by the yeast method was so small as to be open to question of exerting any therapeutic effect per se.

"3. The silver in Neo-Reargon was not precipitated as silver chloride by the addition of sodium chloride as claimed, but instead an un-ionized organic silver compound was precipitated by sodium chloride and other salts."

Under the heading "What it does" in the Neo-Reargon circular it is claimed that "the antiseptic and germicidal power of Neo-Reargon is due to the fact that its solutions attain a tremendous ionic dissociation of silver. . . ." This claim is not in consonance with the preceding report of the Association's chemical laboratory.

The claims for Neo-Reargon are based entirely on experiments of the Pease Laboratories made with Reargon (a product formerly "pushed" by the same firm). Obviously, experiments carried out with Reargon cannot be transferred to Neo-Reargon. The C. P. Chemical and Drug Co. assume that Neo-Reargon would produce the same actions as Reargon, only two and one-half times stronger, because it contains two and one-half times as much silver. Thus they neglect entirely the important influence that the addition of proteins has on silver compounds. As a matter of fact, the efficiency experiments of the Pease Laboratories depend mainly on the rate of penetration into agar jelly. This would be quite different for a "highly ionized" compound than for a gelatose-protected colloid. However, it is not clear what conclusions of practical value could be drawn from these experiments, even for Reargon. The imbibition properties of agar are so peculiar that it would not be justifiable to use it as criterion of penetration of a drug through body fluids, and certainly not for cell penetration.

The entirely unsubstantiated claim is also made that the anthraquinone component has "an antiphlogistic, analgesic and curative [sic] effect in the urethra affected with gonorrhea."

Although it is well known that the germicidal action of silver preparations is not proportional to their silver content, it is claimed that Neo-Reargon, because it is two and one-half times stronger in silver content than Reargon, is capable of exerting an increased germicidal power of 250 per cent over Reargon. The naive question is asked: "Is it conceivable that any pathogenic organism can withstand this enormous destructive power?"

The evidence that is at hand for the clinical efficiency of Neo-Reargon is confined to the paper by Klausner and Wiechowski. This lacks so much in essential details, such as the criteria of improvement or cure, that it could not be considered seriously as evidence. Further, it does not contain any data comparing the effectiveness of Neo-Reargon with that of other forms of treatment. Making some allowance for the usual enthusiasm and partiality of the discoverers and advertisers, it would appear that the reported results with Neo-Reargon do not differ materially from those characteristic for other forms of feebly ionized silver preparations.

Neo-Reargon is inadmissible to New and Nonofficial Remedies because the statements of composition are mystifying, misleading and erroneous; because the claims of action are misleading, and the claims of therapeutic value unacceptable.

Definitions of Education.—Speaking generally, education signifies the sum total of processes by which a community or social group, whether small or large, transmits its acquired power and aims with a view to securing its own continued existence and growth. . . . Education may be defined as a process of the continuous reconstruction of experience with the purpose of widening and deepening its social content, while at the same time the individual gains control of the methods involved.—Dewey: Education, in Cyclopedia of Education (Monroe, ed.), pp. 398, 400.

Correspondence

"POISON GAS FOR MOSQUITOES"

To the Editor:—My attention has been directed to a communication by Dr. Hulussi Mustafa of Diabekir, Turkey (THE JOURNAL, September 4, p. 777), in which apparently he claims to be the first to introduce the use of poison gas for the destruction of mosquitoes.

Permit me, as president of the Royal Society of Tropical Medicine and Hygiene, to direct attention to a paper by a fellow of that society, Mr. K. B. Williamson, which was published in the society's *Transactions* (**17**:485, 1924). It is entitled "The Use of Gases and Vapors for Killing Mosquitoes Breeding in Wells" and is an account of the work he carried out on this subject during the war. He tested a number of different gases, including chloropicrine and chlorine, and gives a full and illustrated account of his research work. Dr. Mustafa has not yet published details of his method, and it is possible that he may be the first to apply the use of poison gas to mosquitoes in swamps; but, so far as I know, Mr. Williamson was the first to make use of poison gas as a larvicidal agent in antimosquito work.

ANDREW BALFOUR, London.
Director, London School of Hygiene
and Tropical Medicine.

IMMUNITY TO CANCER

To the Editor:—In a letter from Geneva, Switzerland, about heredity and cancer (THE JOURNAL, September 4, p. 771), your correspondent quotes Professor Guyénot to the effect that "in Japanese women, cancer of the breast is rare." Apropos of this apparently widespread belief there was an interesting remark made by the French surgeon and scientist Pierre Delbet at a meeting of the Association française pour l'étude du cancer, April 19, 1926. In discussing a paper on the frequency of cancer, Delbet called attention to the erroneous statements made frequently by statisticians in regard to the incidence of cancer. "Thus," says Delbet, "Hoffman, from an American life insurance company, affirms that Japanese women are practically free from cancer of the breast. . . . The day following the communication of this important fact in the Academie de médecine, chance brought to my service a prominent Japanese surgeon. When I spoke to him about cancer of the breast he expressed the opinion that *mammary cancer is very frequent in Japan*" (italics mine).

Curiously enough, it was believed that cancer is only a "gift" of civilization and that it is unseen among wild and uncivilized races. This, however, has been decidedly disproved by recent close investigations. In the French Morocco, for instance, according to Dekester (*Bull. de l'Assn. franç. pour l'étude du cancer* **12**:31, 1923) "all varieties of cancer and all sites of occurrence may be found as elsewhere, and the view that cancer is rare in tropical countries should be abandoned." In Tunis, Lacassade (ibid **11**:140, 1922) found that cancer is as frequent among Arabs as among Europeans. "The better acquainted one becomes with the native population, the more one will find malignant tumors." The English Imperial Research Fund Expedition and the Deutsche Zentralkomitte für Krebsforschung found cancer in the Himalayas, in New Guinea, in the islands of the Pacific, and in Samoa and western Africa in the same forms as seen in Europe.

Cramer (*Brit. M. J.* **1**:175 [Jan. 30] 1926) has recently outlined a very characteristic point concerning the uncertainty of existing cancer statistics.

There is a discrepancy between Holland and England in regard to the mortality from cancer of the breast and uterus:

it is nearly twice as high for English women as for Dutch women. An international committee of distinguished statisticians, working under the auspices of the League of Nations, has undertaken to collect detailed statistics with the object of finding the reason for the difference. The committee has been unable to solve the problem. Cramer then calls attention to the following: 1. Though there is a great difference in the mortality from cancer of the breast and uterus between the two countries, there is no such difference in the total mortality from cancer, which in fact is nearly the same in the two countries. 2. There is among Dutch women a much higher mortality from cancer of the stomach and intestines than among English women. The latter is of importance in that the more frequent development of cancer in the gastro-intestinal tract among Dutch women protects them apparently against the development of cancer in the breast (either by causing death of the patient before a mammary cancer has had time to develop or possibly by creating a real immunity to the development of a new cancer).

Reports to the effect that "in Japanese women cancer of the breast is rare" should be accepted with great caution.

B. M. Fried, M.D., Boston.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TREATMENT OF OZENA

To the Editor:—Kindly tell me the best treatment of ozena, or where I can read about it. Are vaccines of any definite value here? Kindly let me know whether mild alkaline washes every day will prevent further development. Some specialists recommend a postnasal douche to the ordinary procedure. An experienced general practitioner always refused to allow his patients to spray the nose, on the ground that such a procedure spreads infection. If there is any truth in this, then the common saying has truth in it; namely, once one starts nose treatments at the specialist's hands, one has to keep them up forever. Kindly omit name.

A. C. C., M.D., Pennsylvania.

Answer.—Ozena is really not a disease but a symptom often found in cases of so-called atrophic rhinitis. The word "ozena" means a foul smell, but this is not present in all cases of atrophic rhinitis. It is usually due to the fact that the secretions in this condition adhere to the mucous membrane of the nose, dry out and form crusts, which undergo decomposition from which arises the foul odor. So far as the treatment is concerned, there is a great variety of opinion, and also uncertainty, as the actual cause of atrophic rhinitis is not definitely known. Some believe that it is due to an infection with or without a chronic ethmoiditis. If a definite ethmoiditis is present, many advise operation to eliminate the focus of infection before proceeding to any other treatment. If, however, operations are not indicated, it is advisable first of all to remove secretions and crusts by the use of mild, warm alkaline solutions in the nose, being very careful in the manner of douching to avoid involvement of the eustachian tube. Often the use of a dilute solution of hydrogen peroxide applied on cotton pledgets and allowed to remain in the nose from fifteen to twenty minutes, followed by a careful blowing of the nose, will dislodge the secretion and crusts. Then the use of an oily solution, such as liquid petrolatum, alone or with the addition of a grain of menthol to the ounce, will be found very soothing to the nasal mucous membrane and will prevent the adhesion of crusts in many cases. Some men report good effects from the use of autogenous vaccines, but in general it may be said that vaccine therapy has not given very satisfactory results. Sometimes the use of a 25 per cent solution of dextrose in glycerin applied by the patient three or four times a day in the nose will relieve the foul odor. In order to diminish the wide nasal spaces, various operative measures or implantation of cartilage or paraffin beneath the mucosa have been tried in order to prevent the rapid drying of secretions. It must be remembered that atrophic rhinitis is a chronic condition, and if any treatments are taken in a physician's office they must be continued for a long time, or at least the patient should be under supervision at intervals for a long period. We do not believe there is any truth in the common saying that if one starts treatments at the nose specialist's hands, one has to keep them up forever. The amount of treatment must depend first of all on the condition of the patient and on the honesty and good intentions of the physician. The mere fact that treatments of the nose have been begun does not mean that they must be continued indefinitely. In the first place, the treatments will not cause a trouble in the nose that was not present before; and, secondly, the patient is able to stop them on his own volition. So far as spraying the nose is concerned, when a great deal of pressure is used, there is of course always a possibility of carrying infected particles to other portions of the nose; but with the ordinary atomizer, we do not believe that this occurs.

VACCINE TREATMENT OF COLDS

To the Editor:—Please give me a report on the value of vaccine therapy as now used by many in the treatment of the common cold. Please use initials only.

J. W. I.

Answer.—An editorial, "The Common Cold, Again" (The Journal, Dec. 22, 1923, p. 2117) concludes that in view of the present available evidence it is not definitely known whether or not a cold is the result of a specific infectious process. The prophylactic as well as the curative value of vaccine therapy in this condition is therefore quite problematic. What we know about the nature of the affliction makes it highly improbable that much good can be accomplished by means of vaccine, and clinical experience seems to substantiate these deductions. An attempt at immunization during an epidemic is hazardous, because of the greater susceptibility during the negative phase. Successful immunization before an epidemic is rendered improbable by the fact that the micro-organisms which may be responsible for the disease are not always the same in different epidemics, or in various parts of the country during the same epidemic, and that the immunity is so short lived, lasting only several months. This has been brought out repeatedly by reports of the Council on Pharmacy and Chemistry rejecting various mixed vaccines proposed for the treatment of colds and influenza. The brief duration of the immunity also militates against worth-while vaccination for accidental bacterial infection.

The ordinarily short course of the disease and its almost invariably favorable issue render any judgment as to the curative value of this or of any other treatment extremely difficult.

In the prophylaxis of frequently recurring colds in any one person, autogenous vaccine therapy may play a part along with surgical correction of deformities and other abnormalities of the tissues involved, together with improvement of the general hygiene, including hardening treatment.

ERGOT POISONING — CODEINE — ETHYLMORPHINE HYDROCHLORIDE — PERALGA — SCOPOLAMINE

To the Editor:—1. Assuming that a woman ingests 2½ ounces of ergot in three days with suicidal intention and no effects follow, in what period is ergot supposed to be excreted completely? From one ordinary dose, what is the time of excretion? 2. Is codeine sulphate a habit-forming drug? Is dionin? 3. What is a common name for amidopyrine diethylbarbiturate, the official name? 4. Is there any danger following the administration of scopolamine over a long period, say one month? Please use initials only.

J. L. R., California.

Answer.—1. The effect of an ordinary therapeutic dose of ergot does not last more than several hours, owing presumably to the rather prompt excretion. In cases of severe poisoning, however, recovery may require several days.

2. Codeine and ethylmorphine hydrochloride (dionin), having much less euphoric action than morphine or heroin, are not as likely to be habit producing excepting to the extent to which the original ailment of the patient requires its continued use, as they do not cure but merely palliate the suffering.

3. The proprietary "Peralga" has been claimed to be amidopyrine diethylbarbiturate. However, Peralga, stripped of the advertising "literature," was revealed by an investigation in the A. M. A. Chemical Laboratory as essentially a mixture of amidopyrine and barbital (The Journal, March 31, 1923, p. 942). Naturally, this mixture has no standing and there is no "official name" for it. So far as effect is concerned, the same result can be secured by a mixture of one part barbital and three parts amidopyrine.

4. No, not from therapeutic doses.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 9-10. Sec., Dr. James W. Walker, Fayetteville. Homeopathic Board: Rogers, Nov. 9. Sec., Dr. Allison A. Pringle, Eureka Springs.

CONNECTICUT: Medical Examining Board, Nov. 9-10. Sec., Dr. Robert L. Rowley, 79 Elm St., Hartford. Homeo. Medical Examining Board, Nov. 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DELAWARE: Wilmington, Dec. 14-16. Pres., Dr. H. W. Briggs, Wilmington.

IOWA: Des Moines, Nov. 16-18. Commissioner, Board of Health, Dr. Henry Albert, Des Moines.

MAINE: Portland, Nov. 9-10. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MARYLAND: Baltimore, Dec. 14-17. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore.

MASSACHUSETTS: Boston, Nov. 9-11. Sec., Dr. Frank M. Vaughan, Room 144, State House, Boston.

MISSOURI: Kansas City, Nov. 16-18. Sec., Dr. James Stewart, Jefferson City.

NEVADA: Carson City, Nov. 1. Sec., Dr. Simon L. Lee, Carson City.

SOUTH CAROLINA: Columbia, Nov. 9. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

TEXAS: Fort Worth, Nov. 16-18. Sec., Dr. T. J. Crowe, 918-919 Mercantile Bank Bldg., Dallas, Texas.

VIRGINIA: Richmond, Dec. 7-10. Sec., Dr. J. W. Preston, 720 Shenandoah Life Bldg., Roanoke.

WEST VIRGINIA: Morgantown, Nov. 23. Commissioner, The Public Health Council, Dr. W. T. Henshaw, Charleston.

Missouri June Examination

Dr. James Stewart, secretary of the State Board of Health of Missouri, reports the written and practical examination held at St. Louis, June 28-30, 1926. The examination covered 14 subjects and included 132 questions. An average of 70 per cent was required to pass. Of the 119 candidates examined, 118 passed and 1 failed. The following colleges were represented:

PASSED		
College	Year Grad.	Number Passed
Atlanta School of Medicine	(1910)	1
Northwestern University Medical School	(1926)	1
Rush Medical College	(1925) 2, (1926, 2)	4
University of Illinois College of Medicine	(1926)	1
University of Kansas School of Medicine	(1925)	3
Baltimore Medical College	(1907)	1
Johns Hopkins University Medical Department	(1926)	1
University of Michigan Medical School	(1926)	1
St. Louis Univ. School of Med.	(1921) 1, (1925) 1, (1926, 53)	55
University Medical College of Kansas City	(1911)	1
Washington University School of Med.	(1924) 1, (1926, 31)	32
University of Nebraska College of Medicine	(1926)	1
Ohio State University College of Medicine	(1925)	1
University of Cincinnati College of Med.	(1925) 1, (1926)	1
University of Pennsylvania School of Medicine	(1925)	2
Meharry Medical College	(1925)	2
University of Tennessee College of Medicine	(1925)	1
McGill University Faculty of Medicine	(1925)	1
German University of Prague, Czechoslovakia	(1922)*	1
University of Budapest, Hungary	(1915)	1
University of Naples, Italy	(1922)*	1
University of Moscow, Russia	(1919)*	1
University of Berne, Switzerland	(1922)*	1

FAILED		
College	Year Grad.	Number Failed
University of Kiel, Germany	(1919)	1

* Verification of graduation in process.

Maryland June Examination

Dr. Henry M. Fitzhugh, secretary of the Board of Medical Examiners of Maryland, reports the written examination held at Baltimore, June 15-18, 1926. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. Of the 74 candidates examined, 73 passed and 1 failed. Eighteen candidates were licensed by reciprocity from January to July 14, 1926. Three candidates were licensed by special examination. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent
George Washington University Medical School	(1924)	81
Howard University School of Medicine	(1926) 77,	79, 81
Johns Hopkins University Medical Department	(1922)	84, 85, 86, (1925) 86, (1926) 79, 84, 84, 85, 85, 86, 86, 86, 87, 88, 89, 90
University of Maryland School of Medicine	(1923)	88, 80, 84, 88, (1925) 84, 84, 86, 88, (1926) 80, 81, 83, 84, 84, 85, 85, 85, 86, 86, 86, 87, 87, 87, 88, 88, 88, 88, 88, 88, 89, 89, 89, 89, 90, 90, 90, 90, 91, 91, 92, 92, 92, 93, 94, 94
Temple University Department of Medicine	(1925)	84
University of Pennsylvania School of Medicine	(1926)	83
University of Tennessee College of Medicine	(1926)	79
Medical College of Virginia	(1926) 82,	82, 85
University of Virginia Department of Medicine	(1925)	81
Dalhousie University Faculty of Medicine	(1922)	87
McGill University School of Medicine	(1924)	79

FAILED		
College	Year Grad.	Per Cent
Howard University School of Medicine	(1926)	*

LICENSED BY RECIPROCITY		
College	Year Grad.	Reciprocity with
University of Colorado School of Medicine	(1904)	W. Virginia
Georgetown University School of Medicine	(1919)	Dist. Colum.
George Washington University Medical School	(1920) (1921), (1924)	Virginia Dist. Colum.
Emory University School of Medicine	(1921)	Georgia
University of Louisville School of Medicine	(1907)	S. Carolina
American Medical Missionary College	(1903)	Wisconsin
State University of Iowa College of Medicine	(1921)	Iowa
Maryland Medical College	(1909)	Virginia
University of Maryland School of Medicine	(1909) (1915)	W. Virginia South Carolina, (1921) Virginia
Harvard University	(1921)	Dist. Colum.
Washington University School of Medicine	(1923)	Illinois
Bellevue Hospital Medical College	(1897)	N. Carolina
University of Tennessee College of Medicine	(1923)	Tennessee
Medical College of Virginia	(1918)	Virginia

LICENSED BY SPECIAL EXAMINATION	
College	Year Grad.
Tulane University of Louisiana School of Medicine	(1922)
University of Vermont College of Medicine	(1897)
University of Munich, Germany	(1921)†

* No grade given.
† Verification of graduation in process.

Illinois April Examination

Mr. V. C. Michels, superintendent of registration of the Illinois Department of Registration and Education, reports the written and practical examination held at Chicago, April 6-8, 1926. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Of the 88 candidates examined, 78 passed and 10 failed. Nine candidates were licensed by reciprocity and 2 by endorsement of their credentials. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent
Chicago Medical School	(1922) 76, (1926)	79, 79, 79, 80, 81, 81, 82, 84, 86, 87, 88
Loyola University School of Medicine	(1926)	83, 83
Northwestern University Medical School	(1926)	79, 83, 83, 85, 86, 86, 87
Rush Medical College	(1925)	84, 85, 85, (1926) 78, 79, 81, 81, 82, 83, 83, 83, 84, 84, 84, 84, 85, 85, 85, 85, 85, 86, 86, 87, 87, 88, 88, 89, 89, 91
University of Illinois College of Medicine	(1925) (1926)	85, 76, 79, 79, 82, 83, 84, 84, 84, 84, 84, 85, 85, 86, 87, 88, 88, 88
St. Louis University School of Medicine	(1923) 86, (1925)	82
Long Island College Hospital	(1925)	86
University of Virginia Department of Medicine	(1919)	82
University of Manitoba Faculty of Medicine	(1917)	82
University of Toronto Faculty of Medicine	(1921)	84
University of Copenhagen, Denmark	(1922)*	77
University of Naples, Italy	(1919)*	75
University of Moscow, Russia	(1918)*	87

FAILED		
College	Year Grad.	Per Cent
Chicago College of Medicine and Surgery	(1916)	63
Loyola University School of Medicine	(1916)	66
Northwestern University Medical School	(1913)	57
Barnes Medical College, St. Louis	(1904)	†
Beaumont Hospital Medical College, St. Louis	(1894)	48
Meharry Medical College	(1892) 59, (1914)	38
University of Naples, Italy	(1915)* †	(1920)* 69
University of Petrograd, Russia	(1917)*	78‡

LICENSED BY RECIPROCITY		
College	Year Grad.	Reciprocity with
Rush Medical College	(1901)	Washington
State University of Iowa College of Medicine	(1920)	Iowa
University of Louisville School of Medicine	(1907)	Indiana
Flint Medical College of New Orleans University	(1908)	Mississippi
Harvard University	(1922)	Wisconsin
University of Minnesota Medical School	(1901)	Minnesota
University of Nebraska College of Med.	(1914), (1923)	Nebraska
University of Cincinnati College of Medicine	(1923)	Ohio

ENDORSEMENT OF CREDENTIALS		
College	Year Grad.	Endorsement with
University of Colorado School of Medicine	(1924)	N. B. M. Ex.
Rush Medical College	(1925)	N. B. M. Ex.

* Verification of graduation in process.
† No grade given.
‡ Fell below in one subject only.

Book Notices

SURGERY OF NEOPLASTIC DISEASES BY ELECTROTHERMIC METHODS. By George A. Wyeth, M.D. Preface by Howard A. Kelly, M.D. Cloth. Price, $7.50 net. Pp. 298, with 137 illustrations. New York: Paul B. Hoeber, Inc., 1926.

The author reports an experience extending over five years in the treatment of a large number of tumors, using the heat produced by high frequency currents. He accepts for the surgical application of these currents the name "endothermy" proposed by Delherm and Laguerriere, reserving the term "diathermy" for the production of heat within physiologic limits for medical purposes. The author's well founded plea for a simple and exact terminology is weakened by some inaccuracies in his own usage. He talks of monopolar current, a self-contradictory statement, and says that the heat is produced by the oscillations of the current employed. In bipolar electrocoagulation, the d'Arsonval current was discarded long ago in favor of currents of low voltage, high amperage and shorter pauses between the oscillation groups. For the severing of tissues, the author uses his modification of the De Forrest needle, whose application is described in detail. For destruction of tumors, he prefers the pointed electrode. In treating malignant tumors he reports great advantage for the combination of the endothermic knife and coagulation. Numerous illustrations aid in understanding the technical description and support the therapeutic results. The quotations from the literature seem to be selected arbitrarily.

ROENTGEN INTERPRETATION. A Manual for Students and Practitioners. By George W. Holmes, M.D., Roentgenologist to the Massachusetts General Hospital, and Howard E. Ruggles, M.D., Roentgenologist to the University of California Hospital. Third edition. Cloth. Price, $5. Pp. 326, with 226 illustrations. Philadelphia: Lea & Febiger, 1926.

This covers a wide field. The early chapters discuss confusing shadows, artefacts and anatomic variations, continuing with fractures and bone diseases. The later chapters describe chest, gastro-intestinal and genito-urinary conditions. The last chapter deals with fluoroscopic technic, with especial emphasis on safety factors. The subject matter is well presented. The method of giving first a general outline and then discussing special organs and diseases causes a repetition of statements, but this serves to bring out forcibly the conclusions of the authors. They are to be commended for not wasting half the book by a description of obsolete apparatus. There are numerous illustrations, but more could be added to advantage, preferably reversed back to the original film. More tracings such as appear in chapter IX would greatly enhance its value. The book lives up to its preface, presenting a rather brief but excellent survey of the field of roentgen-ray diagnosis, and should be helpful to the general practitioner. For the experienced roentgenologist it is rather brief and superficial, yet worthy of being placed in the library.

ERGEBNISSE DER MEDIZINISCHEN STRAHLENFORSCHUNG (RÖNTGENDIAGNOSTIK, RÖNTGEN-, RADIUM- UND LICHTTHERAPIE). Herausgegeben von H. Holfelder, H. Holthusen, O. Jüngling, und H. Martius. Band II. Paper. Price, 52.50 marks. Pp. 594, with 523 illustrations. Leipsic: Georg Thieme, 1926.

This is the second volume of the annual review dealing with the latest accomplishments in roentgenology, radiology and light therapy. The first chapter, by Juengling, deals with the visualization in the roentgenogram of the skull contents emphasized by the employment of a contrast medium. Full credit is given to the fundamental work of Dandy. The descriptive and applied anatomy of the spaces containing the cerebrospinal fluid are minutely discussed, with illustrations of casts and semischematic drawings. The author states that gaseous contrast mediums were the only ones successful in practice. The technic of ventricular and lumbar puncture is described in detail. The author regards suboccipital puncture as too dangerous. The technic of roentgenography is gone into thoroughly. The author has been unable to find any evidence that stereoroentgenograms are of advantage. There is not sufficient material available to permit definite conclusions as to the value of injections of iodized oil in ventriculography. H. Peiper reports on the value of roentgenography in the diagnosis of diseases of the spinal cord. Roentgenograms without the employment of contrast mediums furnish decisive information only in cases of well developed tumors. Here again Dandy was the pathfinder, but he soon acknowledged the superiority of Sicard's method, the injection of iodized oil. While much remains to be learned, myelography with iodized oil is an indispensable diagnostic procedure; the author considers it indicated in every instance in which there is suspicion of a myelitic tumor, and does not recognize current contraindications. As a contrast medium he uses iodized sesame oil 40 per cent. So far there has been no report of death following this procedure. Fleischner discusses the value of roentgenography in the diagnosis of interlobular pleuritis. H. H. Berg discusses the direct roentgenologic symptoms of duodenal ulcer and their clinical evaluation. He emphasizes the importance of the combination of transillumination with the roentgenogram, and the advantages of serial pictures. He uses a specially constructed apparatus, and calls his procedure target picturing. C. Kroetz discusses the influence of short wave rays on the acid-base equilibrium in the body. T. Klewitz insists that, in treating bronchial asthma, only those patients whose history and sputum examination furnish a clear-cut diagnosis should be given radiotherapy. He says that results may be expected only when the patient demonstrates a hypersensitiveness toward albumin. He discusses the possibility of determining this quality by looking for eosinophilia. The statistics on his technic are rather encouraging. F. C. Geller reviews the results of the experimental irradiation of the ovary. K. Scheele has nothing new to say about endovesical electrocoagulation. E. Schempp finds that radiotherapy of primary cancer of the tongue gives poor results. He is skeptical as regards the possibility of forming a prognosis from the histologic peculiarities of the tumor. Infiltrating tumefactions show a lower radiosensibility, the latter being extremely low in glandular metastases. If any impression on lingual cancer was made at all by the roentgen ray, it was always under high doses and crossfire. The application of radium and radon for surface irradiation is described in all its details; the author believes lingual cancers may be favorably influenced by radium if the dose is high enough. Infiltrating tumors are not amenable for the extratumoral application of radium. As dangers of this method of application are mentioned general cachexia, extensive decay beyond the site of the tumor, and severe hemorrhages due to arrosion. Occasionally necrosis of the jawbone may occur. Leukoplakia, often the forerunner of cancer, is easily cured by radium. The introduction into the tumor mass of needles carrying radium or radon is highly recommended by some American and French authors.

BRAIN AND HEART: Lectures on Physiology. By Giulio Fano, of The Royal University of Rome. Translated by Helen Ingleby. With a Foreword by Prof. E. H. Starling, C.M.G., M.D., D.Sc., University College, London. Cloth. Price, $2.75. Pp. 142, with 19 illustrations. New York: Oxford University Press, 1926.

This is a series of six lectures on themes suggested and illustrated by the author's researches on the heart and its nervous control. The first two chapters, on living matter, are adapted to give lay readers as well as physicians an interesting account of current views and problems about the organization of the stuff that life is made of. The two chapters on inhibition and will develop an assimilative theory of inhibition which relates inhibition with intense anabolic activity. The remaining two chapters deal with excitability and automatism. Automatism is the primordial form of motor mechanism. This primary automatism is due to a nutritive cycle within the cells. As the organism becomes more complex, it becomes more excitable, more unstable. This excitability is superposed on the primary automaticity. "Thus, in the different stages of embryonic life, as in the different species, automatism prevails in the lower forms and excitability is dominant in the higher."

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits.

THE MODERN TREATMENT OF HEMORRHOIDS. By Joseph Franklin Montague, M.D., F.A.C.S., of the Rectal Clinic, University and Bellevue Hospital Medical College. Foreword by Harlow Brooks, M.D., F.A.C.P., Professor of Medicine, University and Bellevue Hospital Medical College. Cloth. Price, $5. Pp. 296, with 116 illustrations. Philadelphia: J. B. Lippincott Company, 1926.

Practical consideration with full data and technic of all modern methods of treatment.

GUÉRIR EST BIEN—PRÉVENIR EST MIEUX. L'effort réalisé en hygiene et en médecine sociales dans le département de Meurthe-et-Moselle. Par Louis Spillmann, Doyen de la Faculté de Médecine de Nancy, et Jacques Parisot, Professeur agrégé chargé de la Clinique des Maladies Tuberculeuses. Paper. Pp. 293, with 93 illustrations. Nancy: Berger-Levrault, 1925.

A report of French progress in social hygiene and the prevention of disease.

A GUIDE FOR DIABETICS. By Walter R. Campbell, M.A., M.D., Department of Medicine, University of Toronto and Toronto General Hospital, and Mame T. Porter, B.Sc., Dietitian, Toronto General Hospital. Cloth. Price, $2.50. Pp. 259. Baltimore: Williams & Wilkins Company, 1926.

Practical manual for patient or physician with much statistical data of importance.

ESSAYS IN THE HISTORY OF MEDICINE. By Karl Sudhoff, M.D. Translated by various hands and edited, with foreword and biographical sketch by Fielding H. Garrison, M.D., Lieutenant Colonel, Medical Corps, U. S. Army. Cloth. Price, $5. Pp. 397, with illustrations. New York: Medical Life Press, 1926.

Translations of stimulating and interesting essays on varied historical topics.

PRACTICAL DIETETICS FOR ADULTS AND CHILDREN IN HEALTH AND DISEASE. By Sanford Blum, A.B., M.S., M.D., Head of Department of Pediatrics, San Francisco Polyclinic and Post Graduate School. Second edition. Cloth. Price, $4 net. Pp. 362. Philadelphia: F. A. Davis Company, 1926.

Standard diet lists without theoretical discussions.

APHASIA AND KINDRED DISORDERS OF SPEECH. By Henry Head, M.D., I.L.D., F.R.S., Consulting Physician to the London Hospital. In 2 volumes. Cloth. Price, $20. Pp. 979. New York: Macmillan Company, 1926.

Fundamental considerations of cerebral localization presented by a master of style in scientific writing.

KLINISCHE SYMPTOMATOLOGIE INNERER KRANKHEITEN. Von Prof. Dr. Norbert Ortner, Vorstand der II. med. Klinik der Universität Wien, Hofrat. Zweiter Band. Krankheitssymptome (mit Ausnahme der Schmerzempfindungen). Von Prof. Dr. Norbert Ortner. Second edition. Cloth. Price, 15 marks. Pp. 330. Berlin: Urban & Schwarzenberg, 1926.

An analysis of gastro-intestinal symptoms.

A PRACTICE OF PHYSIOTHERAPY. By C. M. Sampson, M.D. Cloth. Price, $10. Pp. 620, with 146 illustrations. St. Louis: C. V. Mosby Company, 1926.

Loose consideration in colloquial form with uncritical preferences for physical methods.

DEFECTIVE MEMORY, ABSENTMINDEDNESS AND THEIR TREATMENT. By Arnold Lorand, M.D. Cloth. Price, $3 net. Pp. 340. Philadelphia: F. A. Davis Company, 1926.

Semipopular presentation with the author's usual inaccuracies of scientific judgment.

THE SOCIAL WORKER IN A HOSPITAL WARD. By Elsie Wulkop. With comment by Richard C. Cabot, M.D. Cloth. Price, $3. Pp. 347. Boston: Houghton Mifflin Company, 1926.

Case histories showing how hospital social service aids physician and patient.

MEMORIA: CORRESPONDIENTE AL EJERCICIO, 1924-1925. Por la Presidenta Señora Aurelia López de Fernández. Sociedad Tránsito Cáceres de Allende Pro-Tuberculosos. Paper. Pp. 78. Cordoba, 1925.

SIXTIETH ANNUAL REPORT OF THE NEW JERSEY HOME FOR DISABLED SOLDIERS AT KEARNY, N. Y., FOR THE YEAR ENDING JUNE 30, 1926. Paper. Kearney, 1926.

Medicolegal

Wrongful Refusal to Go for Examination by Specialist

(Valier Coal Co. v. Industrial Commission et al. (Ill.), 150 N. E. R. 651)

The Supreme Court of Illinois, in reversing a judgment which affirmed an award under the workmen's compensation act, says that the claimant testified that, in January, 1923, while he was engaged with other men in putting up a steel beam in the coal company's mine, a sharp pain struck him, which affected his left side and chest, caused a throbbing in his neck, and made him sick. Several physicians testified to having afterward found an aneurysm. In May, 1924, the company served on him a written request to submit, at its expense, to an examination by a named physician at a hospital in Chicago, which the claimant refused to do. Then the company requested him to submit, at its expense, to an examination by a named physician in St. Louis, the company offering to have its local physician accompany him on the trip, if desired; and it repeated this request with a tender to the claimant of $15 to defray his expenses, but he still refused. Then, on June 10, 1924, the company made a motion for a continuance of the cause until such time as the claimant should submit to an examination at the expense of the company, either by the physician in Chicago or the one in St. Louis, or by any other heart specialist or expert diagnostician selected by the industrial commission; but the motion for a continuance was denied and the decision and award of the commission followed. When the requests were made for an examination in Chicago or St. Louis, more than four weeks had elapsed since an examination had been made of the claimant by a physician for the company, and, under the workmen's compensation act of Illinois, the company was entitled to another examination. It appeared that there was no specialist, such as was sought, in Franklin County, where the claimant resided, or in the adjoining counties. St. Louis, 90 miles distant, could be reached by train in about three hours, or by automobile over hard roads practically all the way. The company was entitled to an examination, as the act provides, by a duly qualified medical practitioner or surgeon. Such a practitioner apparently could not be found nearer than St. Louis. Since the claimant drove an automobile, and two of his physicians testified that he was able to perform light work, it did not appear that a trip to St. Louis for an examination by a specialist would have injured his health or resulted in such inconvenience to him that he was warranted in refusing to comply with the company's request. Nor did a notice that the claimant would submit to an examination by any physician or surgeon at any place in Franklin or any adjoining county which could be reached without seriously endangering his health avail him. That notice was received by counsel for the company on July 12, three days before the final hearing set by the commission, and it came too late to afford the company a reasonable opportunity, under the circumstances of the case, to have an examination made by a specialist. That opportunity should have been given by the commission, and the denial of the motion for a continuance for that purpose was error.

Criminal Responsibility Not Dependent on Mental Age

(Commonwealth v. Stewart (Mass.), 151 N. E. R. 74)

The Supreme Judicial Court of Massachusetts says that the defendant, who was found guilty of murder in the first degree, had been permitted to introduce the testimony of a person, who qualified as an expert, to the effect that from an examination it was his opinion that the mental level of the defendant "would be somewhere around 12 years of age . . . that he was not insane nor feebleminded, but low-grade mental capacity, just above the feebleminded level." This evidence was suffered to remain in the case notwithstanding a motion by the commonwealth that it be stricken out; but the jury was restricted by the court in its use of

it in substance to the point whether the defendant was of sufficient mental capacity to have an evil motive for the killing and to hold that motive in his mind for any appreciable length of time. Neither the competence of that evidence nor the correctness of this ruling need be considered. In this state of the case the commonwealth was permitted, subject to exception by the defendant, to ask of a qualified expert in mental diseases these questions, all of which were answered in the affirmative: Whether or not a person of the age of approximately 13 years is of sufficient mentality to have evil motives or malice. Whether or not a person of the mental age of 13 years has the mental ability to plan an act. Whether or not a person of the mental age of 13 years has the power, the mental power to premediate, to plan an act. Whether or not, from your examination of this defendant, in your opinion he has a mentality sufficient to possess malice or evil motives.

It is plain that the posture of the case was such that the evidence thus introduced by the commonwealth was competent. It was in conformity to the true principle of law as to responsibility for homicidal conduct. The evidence had a tendency to show whether the defendant had capacity and reason sufficient to enable him to distinguish between right and wrong as to the act charged against him and to do that act with deliberately premeditated malice aforethought. Criminal responsibility does not depend on the mental age of the defendant nor on the question whether the mind of the prisoner is above or below that of the ideal or of the average or of the normal man, but on the question whether the defendant knows the difference between right and wrong, can understand the relation which he bears to others and which others bear to him, and has knowledge of the nature of his act so as to be able to perceive its true character and consequences to himself and to others. In view of the evidence introduced by the defendant, the questions were not objectionable in form. It was not necessary to frame them with hypothetic qualifications and circumstances. It is enough to decide that there was no error in the admission of the several questions to which exception was saved. No point was made of the difference between "around 12 years" and "13 years" in the testimony of the two expert witnesses, and no importance is attached to it.

Sufficiency of Proceedings for Revocation of License

(State v. Hanson (Iowa), 207 N. W. R. 769)

The Supreme Court of Iowa, in affirming a judgment sustaining an order of the board of medical examiners revoking the defendant's license to practice medicine, says that the initial step in the proceedings was resolutions adopted by the Wright County Medical Society and thereafter filed in the office of the secretary of the board of medical examiners. Notice of the charges contained in the resolutions was served on the wife of the defendant at his usual place of residence in Wright County; he at that time being in the federal prison at Fort Leavenworth, serving a sentence for a violation of the Harrison Narcotic Law. Subsequently counsel appeared for him before the board and filed a motion for a continuence, setting up in a supporting affidavit the absence of the defendant from the state and that, by reason of the incarceration of the defendant, counsel could not make proper preparation for the hearing on the charges filed. The motion was overruled and a trial had on the charges contained in the resolutions and other charges filed by order of the board. Evidence was offered to sustain the charges, but no evidence was introduced in the defendant's behalf.

Section 2578 of the 1913 Supplement to the Iowa code of 1897 provides that

> The board of medical examiners . . . shall revoke any certificate issued by it to any physician who is not of good moral character . . . or who is guilty of gross unprofessional conduct, or for incompetency, or for habitual intoxication or drug habit.

The statute makes no specific provision as to the form of the charges to be filed before the board. The procedure on the filing of charges is prescribed by section 2578a. This statute requires that a notice containing a statement of the charges and the date and place set for hearing be served personally on the accused at least twenty days before the time fixed for such hearing. The statute provides that the notice shall be served in the same manner as original notices for the commencement of an action. One of the methods provided by statute for serving an original notice is on a member of the defendant's family over 14 years of age, at his usual place of residence, if such defendant is not found within the county. The service of notice in this case, therefore, complied with the statute. The notice served stated that the defendant was accused of gross immoral and unprofessional conduct as a physician, and a copy of the resolutions of the county medical society was attached to it. The appearance of the defendant, by counsel, and the filing of a motion for a continuance, waived all defects in the notice.

The resolutions charged the defendant with drunkenness, inebriacy, two convictions in federal court for the violation of the Harrison law, and requested that his license to practice medicine be revoked. The charges were specific, and gave the dates on which the defendant repeatedly pleaded guilty to intoxication in the mayor's court; of his incarceration in an inebriate hospital on the charge of being a dipsomaniac, inebriate, and user of drugs; and of his convictions in the federal court. The charges filed by the state board of medical examiners were habitual intoxication and the use of narcotic drugs. It might be that the charges were somewhat informal in character, but they were in no sense lacking in precision and definiteness, and the court deems them to have been, in substance, quite sufficient. The charges preferred by the board were signed by it, and the omission of the signature of the secretary was not necessarily fatal.

The only action of the board that could in any respect be said to have been arbitrary was its refusal to grant a continuance contemplated to be until the expiration of the defendant's incarceration in the federal prison, but there was nothing in the record to indicate that the board acted arbitrarily or was actuated by improper motives, and there was no claim made before the board that counsel could within a reasonable time have made preparation for the trial; while the charges were of a grave nature, and were abundantly supported by credible testimony.

The suggestion that the statute under which the proceedings were instituted was void for uncertainty was without merit. Nor was the defendant denied due process of law because the district court to which appeal was taken refused to grant him a jury trial. No provision is made by law for a jury trial in such cases, either before the board of medical examiners or on appeal to the district court. Due process of law requires only that the proceedings shall be uniform and regular, and that notice be given the accused, together with opportunity to be heard. It was urged that the board could not be both accuser and judge, but the charges filed before it by the county medical society, although informal, were sufficient to comply with the requirements of the statute, and those filed by the board were to the same effect and desired only to make them somewhat more formal, while on the facts shown it was difficult to conceive how the board could have reached a contrary conclusion.

Society Proceedings

COMING MEETINGS

American Association of Railway Surgeons, Chicago, Nov. 3-5. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.
American College of Surgeons, Montreal, Canada, Oct. 25-29. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.
Association of American Medical Colleges, Cleveland, Ohio, Oct. 25-27. Dr. F. C. Zapffe, 25 East Washington Street, Chicago, Secretary.
District of Columbia, Medical Society of, Washington, D. C., Dec. 1. Dr. C. B. Conklin, 1718 M Street, N. W., Washington, D. C., Sec'y.
Philippine Islands Medical Association, Manila, Dec. 14-17. Dr. I. Concepcion, College of Medicine and Surgery, Manila, P. I., Secretary.
Radiological Society of North America, Milwaukee, Nov. 29-Dec. 4. Dr. Robert J. May, 5005 Euclid Avenue, Cleveland, Secretary.
Southern Medical Association, Atlanta Ga., Nov. 15-18. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.
Southern Surgical Association, Biloxi, Miss., Dec. 14-16. Dr. R. L. Payne, Medical Arts Building, Norfolk, Va., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in America for a period of three days. No foreign journals are available prior to 1921, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

172: 157-312 (Aug.) 1926

*Lymphoblastoma. G. R. Minot and R. Isaacs, Boston.—p. 157.
*Familial Pernicious Anemia. S. E. Dorst, Cleveland.—p. 173.
*Etiology of Heart Disease. J. E. Wood, Jr., and R. D. Kimbrough, University, Va., and T. D. Jones, Boston.—p. 185.
*Etiology of Angina Pectoris. M. H. Kahn, New York.—p. 195.
*Rheumatic Fever. T. T. Mackie, New York.—p. 199.
*Amphoric Breathing and Coin Sound Test: Prognostic Value. R. A. Bendove, Sanatorium, Colo.—p. 221.
*Acute Omentovolvulus. H. Koster, New York.—p. 230.
*Symptoms Associated with Iodine Deficiency in Simple Goiter. K. A. Martin, New Haven, Conn.—p. 237.
Constitutional and Hereditary Traits in Diabetics. J. H. Barach, Pittsburgh.—p. 243.
*Quantitative Estimation of Total Protein Content in Cerebrospinal Fluid. G. A. Young and A. E. Bennett, Omaha.—p. 249.
Table for Lactose (Milk or Urine) and Glucose (Blood or Urine) Calculation. H. D. Haskins, Portland, Ore.—p. 256.
Muscular Activity of Colon: Response to Feeding. P. B. Welch and O. H. Plant, Iowa City.—p. 261.

Lymphoblastoma.—The clinical manifestations in 477 cases of lymphoblastoma are reviewed thoroughly by Minot and Isaacs. Twenty-five per cent of these patients had as their initial symptom one referable to an abdominal lesion. Late in the disease such symptoms occurred with very great frequency. Abdominal and back pain, often intense and pains in the legs and various gastro-intestinal symptoms may be prominent early ones. Genito-urinary symptoms, jaundice, signs of invasion of the pancreas, suprarenals and spinal cord are apt to appear late. Fever and skin manifestations may occur early and even be initial when the chief lesion is in the abdomen. Pregnancy may run its normal course in patients with lymphoblastoma, and is not unusual. In only 27 per cent of the 119 patients with initial symptoms referable to abdominal lesions was there enlargement of lymph nodes in the groins early, and at this time only 23 per cent had enlargement of other external nodes. After the appearance of symptoms referable to an abdominal lesion, the prognosis for a long duration of life is worse than when such manifestations are absent.

Familial Pernicious Anemia.—Dorst's patient was aged 44. She had a well advanced pernicious anemia with predominant cord changes. Her mother, a sister and a brother had all died of the same disease. Among six other members of the family who were examined, only two had a normal gastric secretion; two had a complete achlorhydria and two, a very marked hypochlorhydria, closely approaching an achlorhydria. None of these persons, whose ages ranged from 19 to 54 years, showed an abnormal blood picture.

Etiology of Heart Disease.—Believing that climate and race might be factors of interest in a clinical investigation of the causes of heart disease, Wood, Kimbrough and Jones analyzed two series of cases, the 300 patients of one group residing in or near the state of Virginia and the 323 patients of the other group coming mainly from Massachusetts or neighboring states. All were suffering from or presented signs of organic heart disease. One hundred and twelve of the first group were negroes. From this study it appears that organic heart disease is almost twice as common in the negro as in the white. Hypertension (53.5 per cent) and syphilis (21.4 per cent) are the chief etiologic factors producing heart disease in the negro. Angina pectoris (paroxysmal heart pain) is less common in the negro (5.3 per cent) than in the white (10.4 per cent), despite the fact that syphilis (21.4 per cent) and arteriosclerosis (39.3 per cent) are such important factors in the former. Rheumatic heart disease is almost twice as common in Massachusetts (39.8 per cent) as in Virginia (22 per cent), and this is the largest etiologic group in the former locality. Hypertension as an etiologic factor is somewhat more prevalent in Virginia (45.98 per cent) than in Massachusetts (36.79 per cent), but comprises a large group in each series.

Etiology of Angina Pectoris.—The etiologic factors in eighty-two cases of angina pectoris are discussed by Kahn. Almost 25 per cent of the patients had their first typical attack before the age of 40. The sex proportion was sixty-five males to seventeen females. Tobacco and alcohol could not be excluded as contributory factors. Sudden excessive strain is the most important immediate factor preceding the attack, and its effect is more likely to be injurious in persons engaged in moderate or sedentary occupations in whom the heart and aorta have not been trained to accept sudden strain adaptably. Acute infectious causes such as rheumatism and infected tonsils appear to be important in initiating vascular changes in the aorta and coronary artery area. In only three cases was syphilis a factor. Diabetes was present in ten cases. There was no direct etiologic relation between arterial pressure and the attacks. Gallbladder disease coexisted in three cases.

Rheumatic Fever.—Three hundred and ninety-three cases of rheumatic fever and eighty-nine cases of chorea are analyzed by Mackie. A history of chorea antedating the first attack of rheumatic fever was given by 3.3 per cent of the patients, and among the patients with chorea, 13.4 per cent gave a history of antecedent rheumatism; 186, or 47 per cent of the rheumatic series, had had at least one previous attack of rheumatic fever; twenty-one, or 23 per cent of those with chorea, gave a history of previous signs of this condition. Of 366 cases of rheumatic fever studied, 250 patients showed evidence of cardiac disease either at the time of admission to the hospital or during their stay in the wards. Of sixty-six cases of chorea similarly analyzed, thirty-four showed definite signs of cardiac involvement on admission or during their stay in the hospital. Definite evidence of focal infection was found in 317 of the 393 rheumatic fever patients. The complete removal of the tonsils when evidence of infection is present, together with appropriate treatment of other foci of infection, seems to reduce but not to remove the incidence of recurrences of rheumatic fever. The expected incidence of recurrences in all age groups was found to be 71 per cent. In a general way, the younger the patient at the time of the first attack of rheumatism, the greater the probability of recurrence. Only 57 per cent of the first recurrences were found to develop within a period of four years following the first attack of rheumatic fever. This would seem to be a very important factor in analyzing the true worth of any therapeutic or prophylactic attack on the problem of rheumatism.

Significance of Amphoric Breathing and Coin Sound Test.—In cases of spontaneous pneumothorax in which amphoric breathing is absent and the coin sound is ringing and reverberating, Bendove says a high intrapleural tension is to be suspected. The gradual recession in the pitch of the coin sound indicates a decrease in the intrapleural pressure and a slow reexpansion of the collapsed lung.

Omentovolvulus.—Two cases of omentovolvulus of the variety without coexisting hernia, in which the omentum alone was involved without adhesions to neighboring viscera, are reported by Koster. The mass was palpable abdominally, presented in the right upper quadrant in the region of the gallbladder, and was accompanied by the signs of obstruction to its circulation, namely, serious peritoneal reaction with temperature and pulse rise, localized tenderness and rigidity, and both cases were erroneously diagnosed as cholecystitis.

Symptom Complex of Iodine Deficiency in Simple Goiter.—An unusual symptom complex has been observed by Martin in fourteen patients. The patients varied in age from 7 to 18 years. All presented symptoms suggestive of hyperthyroidism, usually attended by definite enlargement of the thyroid gland. The basal metabolism, on the other hand, was normal. Symptoms and signs were in every case rapidly and permanently relieved by the administration of iodine.

Estimation of Cerebrospinal Fluid Protein.—A method, said to be clinically accurate, for the quantitative estimation of the total protein content in cerebrospinal fluid is described by Young and Bennett. It is based on the principle of precipitating the total protein by alcohol, acetic acid and heat and measuring the resultant precipitation volumetrically in capillary-tipped vaccine tubes and reading it in terms of milligrams per hundred cubic centimeters. The method in about 600 determinations has proved of definite clinical value. Definite evidence of organic neurologic disorders is obtained when qualitative globulin determinations are normal or doubtfully positive. In neurosyphilis the determination is valuable in estimating serologic improvement under treatment. Total protein determinations give one of the earliest findings of cerebrospinal involvement in systemic syphilis.

Archives of Dermatology and Syphilology, Chicago

14: 111-242 (Aug.) 1926

*Rapidly Developing Syphilitic Paraplegia. M. Chung, Peking.—p. 111.
*Rose Bengal Test for Liver Function. N. N. Epstein and J. E. Rauschkolb, Cleveland.—p. 122.
*Hair Dyes; Their Toxic Effects. L. E. McCafferty, New York.—p. 136.
*Cutaneous Manifestations of Protein Allergy. G. Piness and H. Miller, Los Angeles.—p. 145.
Bullous Ichthyosiform Erythroderma: Two Cases. W. H. Goeckerman, Rochester, Minn.—p. 158.
*Congenital Partial Albinism. V. Pardo-Castello, Havana, Cuba.—p. 173.
XLVIII. Recklinghausen's Neurofibromatosis and Skeleton. E. P. Lehman, St. Louis.—p. 178.

Rapidly Developing Syphilitic Paraplegia.—Rapidly developing paraplegia of syphilitic origin is a common neurologic symptom in China. A study made by Chung of thirty-four cases distinguishes two groups: (1) an acute type which develops either over night or within forty-eight hours, accompanied by a flaccid paralysis with total loss of sensory function below the lesion; with sphincter disturbances, and vasomotor changes; (2) a subacute type which develops more insidiously, associated more often with a spastic paralysis with increased reflexes, more or less disturbances in sensation, sphincter troubles and trophic changes. The pathologic condition underlying these lesions, in the acute cases, is always thrombosis of one or more important spinal vessels with secondary changes in the cord, and in the subacute cases is also one of thrombosis but with a more widespread meningomyelitis. Recovery is by no means rare. In general, the disease is not rapidly fatal; but the prognosis as to function in protracted cases is grave. Reestablishment of the circulation is largely responsible for the cases of recovery. The use of arsphenamine is necessary to cure the underlying syphilis and to prevent, if possible, further injury to the nervous system.

Rose Bengal Test for Liver Function.—This report by Epstein and Rauschkolb is based on a total of 252 tests applied to various types of syphilitic patients. Latent hepatic disease occurring in patients in the various stages of syphilis can be detected by means of the rose bengal liver function test. Arsphenamine jaundice is constantly associated with definite retention of rose bengal in the blood stream. With clinical recovery, the liver function returns to normal. There is no permanent change in liver function following clinical recovery from an arsphenamine hepatitis. Acute syphilitic hepatitis probably sometimes occurs during the secondary stage without physical signs pointing to liver disease. The authors frequently found the rose bengal liver function test a valuable indicator as to the prognosis in cases of arsphenamine icterus. Moreover, they believe that it reveals cases of acute syphilitic hepatitis which cannot be diagnosed in any other manner. The test is an adjunct in the treatment of syphilitic patients.

Toxic Effects of Hair Dyes.—McCafferty asserts that vegetable hair dyes, such as henna, are harmless. All metallic dyes are dangerous. Compound hennas are dangerous because of the metallic substances which they contain; the amount of henna is slight and acts only as a carrier for the metal. All synthetic organic dyes, of which the most important member is paraphenylendiamine, are dangerous. Bleaches, such as hydrogen peroxide, when freely used, may cause the hair to break off. Dye removers are dangerous and should be prohibited from use in beauty shops.

Allergic Dermatitis.—Three hundred and forty-five cases of allergic dermatitis have been studied by Piness and Miller. The results of this study demonstrate the importance of allergy in dermatology.

Congenital Partial Albinism.—Pardo-Castello is inclined to believe with Darier and others that cases of congenital leukoderma, improperly called partial albinism, are in reality cases of achromic nevi.

Indiana State Medical Association Journal, Ft. Wayne

19: 327-394 (Sept.) 1926

Loss of Vision: Interstitial and Phlyctenular Keratitis. C. Loeb, Chicago.—p. 327.
Chronic Colitis Versus Chronic Cholecystitis. G. A. Collett, Crawfordsville.—p. 330.
Extra-Uterine Pregnancy. C. A. Nafe, Indianapolis.—p. 332.
Some Urologic Problems. E. Rupel, Indianapolis.—p. 340.
Romance of Country Doctor. C. H. Good, Huntington.—p. 341.

Journal of Industrial Hygiene, Baltimore

8: 317-366 (Aug.) 1926

Reducing Cost of Syphilis in Industry. W. A. Sawyer and B. J. Slater, Rochester, N. Y.—p. 317.
*Effect of Metallic Zinc, Zinc Oxide and Zinc Sulphide on Health of Workmen. R. P. Batchelor, J. W. Fehnel, R. M. Thomson and K. R. Drinker, Boston.—p. 322.

Effect of Zinc on Health.—Detailed clinical and laboratory studies made by Batchelor et al. on twenty-four workmen exposed over periods of time varying from two to thirty-five and one-half years, to the inhalation of varying concentrations of zinc in the form of zinc oxide, zinc sulphide or fine metallic zinc dust (manufactured, in the main, from ores conspicuously low in lead and low in cadmium) have revealed no acute or chronic illnesses ascribable to zinc. The workmen chosen to represent varying types and degrees of exposure to zinc proved, on the whole, a vigorous, healthy lot of men, giving no histories of significant past illnesses and showing only such general physical conditions as one would expect to find in any similar group of men of the same ages, of the same social status, and doing approximately the same amount of physical work in an atmosphere with a moderate amount of dust, but with no exposure to zinc. This fact is especially significant, indicating, as it does, that ill health ascribed to zinc, particularly the so-called chronic zinc poisoning often referred to in the literature, is in all probability due to toxic impurities, such as lead, cadmium, arsenic and antimony, which commonly contaminate zinc ores, and not to zinc itself. Zinc workers absorb and excrete zinc in amounts considerably over the normal, and they maintain constantly a blood zinc content slightly higher than normal. It is apparent, however, that abnormal amounts of zinc may enter and leave the body for years without causing symptoms or evidence that can be detected clinically or by laboratory examinations significant of gastro-intestinal, kidney, or other injury. The fact is stressed that the amounts of zinc in the urine and the feces of zinc workers represent increased amounts of a normal urinary constituent, and not the presence of a metal abnormal to living cells and to metabolic processes.

Journal of Laboratory and Clinical Medicine, St. Louis

11: 1015-1116 (Aug.) 1926

*Diabetic Problem. E. S. Du Bray, San Francisco.—p. 1015.
*Significance of Changes in Composition of Blood and Urine After Ingestion of Glucose. I. Katayama, New York.—p. 1024.
*Uric Acid: I. Comparison of Direct and Isolation Methods of Determination in Blood Filtrates: Modification of Folin's Method. R. v. E. Wiener and H. J. Wiener, New York.—p. 1035.
*Sedimentation Reaction of Erythrocytes. W. H. Morrias and E. H. Rubin, Wallingford, Conn.—p. 1045.
Capillary Innervation and Staining of Endothelial Cells. I. S. Barksdale, Charleston, S. C.—p. 1053.
*Mercurochrome in Treatment of Typhoid: Three Cases. J. H. Foster and H. A. Chao, Changsha, China.—p. 1057.
Sthenic Action of Epinephrine on Intestines. W. J. R. Heinekamp, Chicago.—p. 1062.
*Electrocardiogram in Coronary Thrombosis. N. E. Clarke and F. J. Smith, Detroit.—p. 1071.
Toxicities of Local Anesthetics: Apothesine. H. C. Hamilton, Detroit.—p. 1082.
*Estimation of Urea in Blood and Urine by Direct Nesslerization. J. H. Roe and O. J. Irish, Washington, D. C.—p. 1087.

Simple Hydrogen Electrode for Use in Biochemistry. A. D. Garrison, H. O. Nicholas and J. G. Pasternack, Houston, Texas.—p. 1091.
*Modification of Goodpasture's Technic for Peroxidase Reaction in Blood Smears. D. N. Beacom, Denver.—p. 1092.
*Modification of Thalhimer Apparatus for Slow Intravenous Injection of Glucose and Saline Solutions. G. T. Pack, University, Ala.—p. 1094.
Improved Colony Counting Apparatus. T. C. Buck and J. C. Swenarton, Baltimore.—p. 1095.
Dental Contribution to Basal Metabolism Test. J. B. Williams and M. Nolting, Richmond, Va.—p. 1097.

Diabetic Problems.—Special attention is called by Du Bray to a large group of early or so-called latent cases in which the proper study of the individual furnishes important data for the future management of the patient. In this group the glucose tolerance test supplies significant information not obtainable by any other means. The author points out that the estimation of the fasting blood sugar alone is not always of diagnostic value, since even in a severe case of diabetes the fasting blood sugar may be normal if the patient has been on a diet previous to the test.

Blood and Urine Changes After Glucose Ingestion.—The ingestion by mouth of 1.75 Gm. glucose per kilogram of body weight in 50 per cent solution, three hours after a standard meal, produced in the majority of subjects seen by Katayama a slight drop in the inorganic phosphorus of the blood with a markedly increased output in the urine. In a few instances the blood phosphorus was increased. In only three of the twenty-two subjects studied was the inorganic phosphorus of the urine diminished. These changes in the blood and urine phosphorus after glucose were similar for hyperthyroid and nonhyperthyroid subjects. Changes in blood and urine chlorides after glucose were studied in sixteen individuals. In four, the blood chlorides remained unchanged; in two an increase and in ten a decrease were found. In only one was an increased urine chloride noted; the remainder showed a strikingly diminished excretion of chlorides. Changes in the blood chlorides cannot be due to a dilution of the blood. The intake of the glucose produced no appreciable change in the hemoglobin content of the blood in seven cases reported. A shift of the chlorides from the blood to other tissues appears to be the only tenable explanation of the changes noted. Following the administration of the glucose in some instances, a fall of the nonprotein nitrogen of the blood was accompanied by an increased output of urine nitrogen. In other cases the blood nonprotein nitrogen rose with a fall in the urine nitrogen. The ingestion of glucose produced a rise in the lactic acid of the blood. This rise was greater in individuals with normal tolerance for carbohydrate than in those with a diminished tolerance.

Determination of Uric Acid.—A modification of the Folin method of uric acid determination, which eliminates the danger of precipitation in the reaction mixture and produces a color which is stable for twenty-four hours, is described by the Wieners; and the method is adapted to the determination of uric acid present in the urine.

Sedimentation Reaction of Erythrocytes.—The sedimentation reaction has found widespread employment as a clinical test and has been found especially useful in tuberculosis as an indication of the degree of activity present. A micromethod is presented by Morriss and Rubin employing only 0.1 cc. of blood which offers results comparable to standard macromethods.

Mercurochrome Treatment of Typhoid.—Intravenous injections of mercurochrome-220 soluble, in doses of 5 mg. per kilogram of body weight, were given by Foster and Chao in two cases of typhoid fever and one of paratyphoid, on the thirty-eighth, eleventh and the eighteenth day of the disease. In none of the cases was there any marked effect on the temperature curve. Two cases showed a temporary leukocytosis during the chill. In all three cases, following the injection, there was a chill with general malaise and abdominal distress. One patient had nausea and vomiting. About twenty hours after the treatment all three had an intestinal hemorrhage, moderate in one but quite severe in the others. The first patient had no further complications and was discharged in two weeks. The second patient had a perforation of the intestine but recovered after operation. In the third case there was continued diarrhea, and the patient died about four weeks later with more hemorrhage.

Electrocardiogram in Coronary Thrombosis.—The similarity of the electrocardiograms obtained by Clarke and Smith by experimental injury to the ventricular muscle through various methods with electrocardiograms from clinical examples of coronary thrombosis suggests that the acute muscular insult in both instances causes similar electrical disturbances which produce a characteristic change in the T-waves of the curves. For clinical purposes this change, consisting of elevation of the T-waves which branch directly from the R or S limb, the authors aver, may be considered as strong presumptive evidence of coronary occlusion.

Estimation of Urea by Direct Nesslerization.—The turbidity obtained when nesslerizing directly urines, or tungstic acid blood filtrates, which have received urease treatment, is due to the precipitation of the mercury in the Nessler's reagent by traces of proteins, and other organic matter, in both the urease solution and the substrate. The solution of the problem of producing satisfactory colors when nesslerizing such mixtures is the removal of mercury precipitants. After an investigation of many clarifying procedures, Roe and Irish have found that the turbidity-producing substances can be removed most conveniently and satisfactorily by treatment with calcium phosphate in an alkaline medium. This procedure consists of alkalinizing the mixture, adding a little calcium nitrate, which precipitates the phosphate previously added as a buffer for the urease digestion, mixing thoroughly, and centrifugalizing. The calcium phosphate adsorbs the objectionable organic matter, and the clear supernatant solution obtained after centrifugalizing is decanted and nesslerized. The color obtained in a solution filtered free from mercury precipitants by this procedure compares excellently with that produced by a pure ammonium salt solution when nesslerized.

Modification of Goodpasture's Stain.—A modification of Goodpasture's stain has been devised by Beacom, which gives good results for about eight months. The amount of basic fuchsin in the original stain is doubled and the hydrogen peroxide is omitted. When it is desired to stain the blood smear, a 1:200 dilution of hydrogen peroxide is made in distilled water. This gives the same concentration as in Goodpasture's stain. Without previous fixation, a noted quantity of the staining fluid is applied to the film. After one minute the same number of drops of the aqueous hydrogen peroxide solution is added and allowed to act from three to six minutes, depending on the stain and on the depth of staining desired. The preparation is then rinsed, dried and examined. By this method the granules stand out very clearly in the cells which give the peroxidase reaction.

Method for Slow Intravenous Injections.—A method is described by Pack for the maintenance of a high and equable temperature of the fluid. An ordinary glass condenser (sterile) is interposed in the circuit together with a thermometric attachment. The outer chamber of the spiral condenser is connected with slowly running hot water, the source of which is either a convenient hot water tap or a funnel to which hot water is added as needed. The thermometer is sterilized by immersion in a 1:500 bichloride of mercury solution and inserted in the upright limb of a glass T-tube.

Michigan State Medical Society Journal, Grand Rapids

25: 427-456 (Sept.) 1926

Iodine in Treatment of Goiter. R. B. Bailey, Ann Arbor.—p. 427.
Brain Injuries. L. Dretzka, Detroit.—p. 430.
*Bottle in Rectum Removed with Obstetric Forceps. I. R. Browning and J. L. Browning, Iron Mountain.—p. 433.

Bottle in Rectum.—The patient of the Brownings asserted that he accidentally sat on a bottle after bathing, and it entered the rectum. The technic of removal consisted of the instillation beyond the foreign body by catheter of approximately 8 ounces (235 cc.) of warm sweet oil; the rectum above also was dilated with air. Several attempts to remove the bottle manually failed. Small 10-inch obstetric forceps were then used. After strenuous traction without results, the authors inserted into the bottle a piece of wood crosswise, to which was attached a strong cord. By the combined use of

this device and the obstetric forceps, they were successful in removing the foreign body. The latter proved to be a glass mustard jar. Its greatest diameter was 7.1 cm., and its length was 9 cm.

New Jersey Medical Society Journal, Orange

23: 381-428 (Aug.) 1926

Recent Advances in Obstetrics. P. B. Bland, Philadelphia.—p. 381.
Masked Tuberculosis. B. S. Pollak, Hoboken.—p. 389.
Fractures of Femoral Shaft. H. Klaus, Union City.—p. 393.
Gastro-Intestinal Cancer Diagnosis by Radiology. F. Devlin, Newark.—p. 397.
Instructions to Hospital Interns. W. J. Carrington, Atlantic City.—p. 398.

Philippine Islands Medical Association Journal, Manila

6: 211-244 (July) 1926

*Case of Renal Tuberculosis. J. Eduque, Manila.—p. 211.
*Mercurochrome in Malaria. F. Eubanas, Culion Leper Colony.—p. 215.
Woodward's Monograph on Alvine Fluxes. F. G. Haughwout, Manila.—p. 218.
*Sodium Iodide in Gonorrheal Epididymitis. P. A. Rodriguez, Zamboanga.—p. 223.
*Ancylostomiasis: IV. Chenopodium Treatment. C. Manalang, Zamboanga.—p. 226.
*Id.: V. Thymol Treatment. C. Manalang, Zamboanga.—p. 228.

Renal Tumor Without Symptoms.—Eduque relates a case of tuberculous kidney in which the only symptom was the tumor. He was of the opinion that the case was at the beginning a cystic kidney which later became complicated with a destructive suppuration, and that the organ had become a fairly large bag containing a somewhat yellowish, foul-smelling, dirty pus. It was removed by laparotomy. The pathologic examination made the diagnosis. Then a roentgen-ray examination of the lung was made and tuberculous lesions were found.

Mercurochrome in Malaria Among Lepers.—Seven chronic malarial cases among lepers in the Culion Leper Colony received an intravenous injection of 1 per cent solution of mercurochrome-220 soluble, the average dose being 0.003 Gm. per kilogram of body weight. Two patients received two such injections. No untoward symptoms calling for special medication were observed. The only symptoms complained of by some were chilliness, headache and slight fever, all of which appeared two to six hours after injection. The results reported by Avison and Koo were not confirmed by Eubanas. Even after two intravenous injections the blood remained positive for malarial parasites, although in most of the cases some of the most prominent symptoms, as fever or chill, subsided.

Sodium Iodide in Gonorrheal Epididymitis.—Ten cases of gonorrheal epididymitis were successfully treated by Rodriguez by intravenous injection of sodium iodide, 2 Gm. in 20 cc. of distilled water, every other day. In addition to this injection, the patient is put to bed, a purgative is administered, and the swollen part is supported; local treatment is stopped in the acute stage, and sulphonated bitumen ointment with hot moist compress is applied to the affected scrotum twice a day. Methenamine, 5 grains (0.3 Gm.), three times daily, is given internally as a urinary antiseptic.

Chenopodium in Ancylostomiasis.—Chenopodium, 3 cc., was given by Manalang (twice in doses of 1.5 cc. in gelatin capsules) followed by magnesium sulphate, to fifty-seven patients once, curing twenty-three, to twenty-one twice, curing seven, to eight three times, curing seven, and to one the fourth and fifth times without effecting a cure. In the twenty-three patients given two treatments, 1,688 worms were recovered, of which 1,518, or 89.5 per cent, were discharged by the first treatment. In the ten patients given two treatments, who discharged 1,007 worms, it was found that the necators were more vulnerable than the ancylostomes, in that 89 per cent of the former and 72 per cent of the latter were discharged by the first treatment. Also, the males were more susceptible than the females in both species.

Thymol in Ancylostomiasis.—Thymol, 2.6 Gm. (given twice in doses of 1.3 Gm. in capsules followed by magnesium sulphate), was given by Manalang to thirty-eight persons, curing ten; to fifteen twice, curing three; to ten, three times, curing five, and to four, four times, curing none. In twenty patients given two treatments, 666 worms were removed, of which 494, or 74.1 per cent, were removed by the first treatment. Of the twenty cases, worm classifications and counts showed that the necators were more vulnerable than the ancylostomes, in that 74.8 per cent of the former and 64.3 per cent of the latter were removed by the first treatment. The males were more susceptible than the females in both species.

Surgery, Gynecology and Obstetrics, Chicago

43: 129-270 (Aug.) 1926

*Exstrophy of Bladder. C. H. Mayo and W. A. Hendricks, Rochester, Minn.—p. 129.
*Treatment of Recurrent Laryngeal Nerve Paralysis by Nerve Anastomosis. C. H. Frazier and W. B. Mosser, Philadelphia.—p. 134.
*Lymphatics of Extrahepatic Biliary Passages. S. Kodama, Tokyo.—p. 140.
*Femoral Hernia. R. H. Russell, Melbourne, Australia.—p. 147.
*Carcinoma of Prostate. H. C. Bumpus, Jr., Rochester, Minn.—p. 150.
Calcified Hypernephroma of Kidney. A. Arkin, Chicago.—p. 155.
*Iodized Oil as Pyelographic Medium. C. H. Neuswanger, Waterbury, Conn.—p. 169.
*Streptococcus Immunization of Rabbits in Prevention of Streptococcus Arthritis. L. H. Mayers and M. L. Schroeder, Chicago.—p. 176.
*Physiologic Significance of Gallbladder. J. G. Remynse, Rotterdam.—p. 181.
Technic of Abdominal Hysterectomy for Carcinoma of Uterus. K. Franz, Berlin.—p. 185.
Technic of Partial Thyroidectomy. H. H. Searls, San Francisco.—p. 191.
Technic of Appendectomy. J. de Mendonca, Rio de Janeiro, Brazil.—p. 195.
*Early Diagnosis of Anencephalus. J. T. Case and J. E. Cooper, Battle Creek, Mich.—p. 198.
Exploration of Cerebellum. E. B. Towne, San Francisco.—p. 204.
Flexible Knee Traction Splint. K. H. Digby, Hongkong.—p. 207.
*Closed Drainage in Subphrenic Abscess. J. D. McEachern, Winnipeg, Man.—p. 215.
Aspiration in After Treatment of Operation on Urinary Bladder. H. B. Devine, Melbourne.—p. 219.
Operative Treatment of Ununited Fracture at Hip. R. Whitman, New York.—p. 221.
Insulin-Glucose Treatment of Shock. D. Fisher, Boston.—p. 224.

Exstrophy of Bladder.—Sixty-six cases of exstrophy of the bladder are analyzed by Mayo and Hendricks. Forty-eight of these patients are living. Plastic operation alone for closure of the bladder was performed in eight cases; transplantation of both ureters, in forty-six cases; transplantation of one ureter, in nine cases; exploration with closure because of hydro-ureter or hydronephrosis, in two cases; transplantation of one ureter to the hepatic flexure, in one case; suprapubic cystostomy for excision of carcinoma of the bladder, in one case; the Moynihan operation, in two cases, and the Coffey operation, in three cases. In two of these the two ureters were transplanted simultaneously, and in the other, one ureter was transplanted. Twenty-nine patients have reported relative to their condition. Twenty-five are satisfied with the results. Six of the twenty-nine patients are living from one to three years after operation; ten are living from three to six years; ten are living from six to twelve years, and three are living from twelve to fifteen years. Seven of the nineteen patients not heard from were operated on since August, 1925. Seven were males and four were females. They lived from two to nineteen days after operation. Eleven (16.6 per cent) died in the hospital. Seven patients died after leaving the clinic. They lived from two months to twelve years after operation. One patient died from pneumonia; on from typhoid; one from metastasis from carcinoma of the bladder; one from nephritis, and one from tuberculosis of the lungs. One patient died twelve years after operation following an accident that occurred during an attack of epilepsy. The cause of one patient's death was not determined.

Treatment of Recurrent Laryngeal Nerve Paralysis.—Anastomosis of the recurrent laryngeal nerve with the descendens noni branch of the hypoglossal is technically a safe and relatively easy procedure. Results reported by Frazier and Mosser indicate that improvement is to be expected in at least 60 per cent of cases. The incidence of improvement could probably be increased by confining the operation to patients in whom the duration of paralysis had not exceeded six years. Anastomosis with the phrenic nerve has been successfully accomplished.

Lymphatics of Extrahepatic Biliary Passages.—Kodama shows that the lymphatics of the duodenum and gallbladder are intimately and directly connected. Some of the lymphatic vessels of the liver, gallbladder, duodenum, pancreas and appendix enter the lymph glands that are located about the portal vein. The lymphatic connection of the liver and gallbladder is made in the parenchyma and capsule of the liver. Phenoltetrachlorphthalein is not normally secreted by the wall of the gallbladder; but it is secreted through the wall of the duodenum and of the jejunum.

Treatment of Femoral Hernia.—Closure and abolition of the sac by separation and firm torsioning from below is, in Russell's opinion, by far the simplest, safest and best means of dealing with femoral hernia.

Carcinoma of Prostate.—In 243 of the 1,000 cases analyzed by Bumpus, metastasis was demonstrable. In 44 per cent it had affected the lymphatics. The inguinal nodes were involved in forty-four cases. In this series, 539 patients were examined roentgenographically and the pelvis found involved in 123, the spine in 107, making an aggregate of positive findings in approximately 25 per cent of the series. The femur was affected sixteen times and the ribs ten times, but always in conjunction with pelvic involvement. Eleven patients had metastasis to the spinal cord which resulted in symptoms simulating tumor of the cord, with more or less paralysis prior to death. The skin, the liver and the kidneys were affected in several cases. The treatment of these patients was surgical and by radium. Just as the surgical results did not warrant the continuation of that form of treatment except in selected cases, so the results of radium treatment compelled its abandonment. In a few cases, prostatectomy was performed following irradiation of the gland with radium. The results were so poor and the technical difficulties of excising a gland previously irradiated so great that it was abandoned. In other cases, radium was given following prostatectomy if the pathologic examination showed little involvement. Here Bumpus believes is the greatest field of usefulness of radium in connection with malignant disease of the prostate. By the thorough irradiation of the prostatic capsule and seminal vesicle, the lymphatic drainage is destroyed and metastasis to the iliac lymph nodes may be prevented if it has not already occurred. Moreover, the resulting scar tissue encases any malignant areas that may remain and tends to keep them localized.

Iodized Oil as Pyelographic Medium.—Iodized oil, 40 per cent, in Neuswanger's opinion appears to offer a pyelographic medium that is superior to those mediums in use at the present time in regard to toxicity and degree of opacity to the roentgen ray.

Streptococcus Immunization in Prevention of Streptococcus Arthritis.—Mayers and Schroeder assert that protective inoculation against intravenous streptococcus infection in rabbits is possible by means of a specially prepared bacterial extract.

Physiologic Significance of Gallbladder.—The fact that removal of the gallbladder is not fatal, Remynse says, may not be accepted as proof that the function of the gallbladder is not important. Of more significance is the manner in which the organism adapts itself to the loss of the gallbladder.

Early Diagnosis of Anencephalus.—Four cases are reported by Case and Cooper in which the diagnosis of anencephaly was made before the beginning of labor. In each case the diagnosis was based on atypical physical observations plus the proof furnished by the roentgenogram, and verified by operation.

Closed Drainage in Subphrenic Abscess.—Under local anesthesia McEachern inserted a tube into the abscess cavity through a trocar, if necessary, without removing the patient from the bed. By the use of surgical solution of chlorinated soda the rigid walls of the abscess cavity are softened, and the infection overcome. With the assistance of negative pressure, the collapsed lung expands, the diaphragm returns to its normal level, and the approximated walls of the abscess obliterates the cavity.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 329-366 (Aug. 21) 1926

Dangers Associated with Medical Practice and How to Avoid Them. W. E. Hempson.—p. 329.
Eczema. A. Whitfield.—p. 332.
Treatment of Psoriasis. R. W. MacKenna and E. F. Skinner.—p. 338.
*Recovery After Massage of Heart. R. M. Glover.—p. 342.
Nerve Enlargement in Leprosy. R. G. Cochrane.—p. 343.
*Nitrous Oxide Anesthesia: Status Epilepticus: Lumbar Puncture: Recovery. C. W. Healey.—p. 343.
Rash in Scarlet Fever Delayed Till Fifth Day. L. P. Philips.—p. 343.

Recovery After Heart Massage.—In Glover's case the heart stopped beating during the course of a laparotomy. All the usual restoration measures were tried but failed. Finally heart massage through an incision in the diaphragm was tried. After about two minutes it began to beat—very feebly at first, but gradually increasing in strength. The respiration started again soon after the heart. The patient is alive and well.

Anesthetic Induces Status Epilepticus. — Shortly after Healey's patient had been anesthetized with nitrous oxide, the child, aged 14 months, went into a state of status epilepticus. Under treatment with chlorbutanol, calcium lactate and glucose the patient improved, and a few days later was discharged in good health.

2: 367-408 (Aug. 28) 1926

*Acute Nephritis in Childhood. L. G. Parsons.—p. 367.
*Goiter in Childhood E. H. M. Milligan.—p. 373.
Poor Law Reform and Public Health. J. M. Martin.—p. 376.
Id: In Relation to London. J. Fenton.—p. 380.
Id: From Point of View of Noncounty Borough or Urban District. R. P. Garrow.—p. 382.
Id: From Poor Law Medical Officer's Viewpoint. A. L. Baly.—p. 383.
Legal Definition of Live Birth. G. Carter.—p. 385.
Circular 426 (Cancer). J. Brown.—p. 387.
Transverse Presentation with Normal Pelvis and Normal Child. E. Burke. —p. 388.
Epinephrine in Cardiac Arrest. J. Livingston.—p. 388.

Acute Nephritis in Childhood.—In the treatment of nephritis Parsons still adheres to the milk diet, given as undiluted milk, or milk and barley water, or junket. Sugar may be allowed as a sweetening agent, or the child may be given barley sugar. Fruit juice is also allowed as a flavoring agent, and at the end of six weeks a small amount of chocolate may be added. The first increase in food is the addition of breadcrumbs to the milk; later bread and butter; during the third month milk pudding, banana and cream, potato and green vegetables, and at the end of this month a small quantity of fat bacon, which should be well soaked overnight to remove as much salt as possible. During the fourth month, if the child has apparently recovered, a gradual return to the full diet is permitted. In the absence of symptoms the amount of albumin is carefully watched after each increase in diet. In Parson's opinion, attempts to relieve the kidney by increasing elimination of fluids by the skin and by the bowel are of little value. Diuretics are probably harmful and should never be used. In the treatment of acute nephritis drugs have no place. The only exceptions to the latter statement are the following: 1. In cases which show a considerable amount of pus in the urine, alkalis—for example, sodium bicarbonate or potassium citrate—may be used in an attempt to alkalize the urine; but the results are not very satisfactory, and Parsons thinks it is probably wiser not to give them for this purpose. 2. Occasionally in the earlier stages of the disease a ketosis occurs which can be treated by glucose and sodium bicarbonate. 3. In uremia the value of intravenous injection of magnesium sulphate is undoubted.

Goiter in Childhood.—Of 1,870 children examined by Milligan, 5.5 per cent had rheumatism. Diseases of the ear, nose and throat were present in 32.2 per cent of goitrous children and 15 per cent of all children. Mental defects were found in 5.8 per cent of goitrous children and 0.7 per cent of all children. Among 264 girls (of all ages) examined, nineteen had goiter, and among 273 boys examined nine had goiter.

Of all the children (goitrous and nongoitrous) thirty-seven girls, or 13.9 per cent had rheumatism, and thirty-six boys, or 13.1 per cent had rheumatism. Among the goitrous children, of the nineteen girls five, or 26.3 per cent had rheumatism, and of the nine boys 33.3 per cent had rheumatism.

Indian Medical Record, Calcutta

46: 193-224 (July) 1926

Epidemic Dropsy. S. N. De.—p. 193.
Septic Abortion. S. K. Gupta.—p. 195.
Longevity, and How to Attain Long Life. J. N. Ganguli.—p. 196.
Antibodies. A. Ray.—p. 199.
Indications for Birth Control. M. S. Nawaz.—p. 205.

46: 225-256 (Aug.) 1926

Amebic Dysentery. S. K. Mukherji.—p. 225.
Peculiar Type of Malaria. R. N. Chatterjee.—p. 233.
Pain in Labor. S. Chatterjee.—p. 234.

Journal of Tropical Medicine and Hygiene, London

29: 233-298 (Aug. 16) 1926

*Epidemiology of Cancer in Holland and Italy. L. W. Sambon.—p. 233.
*Cancer of Stomach of Wild Rat and Infection with Nematode Worm, Hepaticola Gastrica Baylis, 1925. C. Bonne.—p. 288.
Mycology. J. Ramsbottom.—p. 291.
Entomologic Notes with Cancer Field Commission in Trentino, 1925. K. G. Blair.—p. 294.
Examination of Cancerous and Other Tumors in Animals Collected by Dr. Sambon. G. L. Cheatle.—p. 298.

Epidemiology of Cancer.—Some of the points stressed by Sambon are as follows: Cancer distribution and prevalence vary from place to place, often considerably, irrespective of climate, race, food, type of dwelling, habits and customs. The organs or parts of the body most frequently affected by cancer vary not only in countries far removed from one another but also, and often strikingly, in adjoining districts. As a rule, cancer cases are distributed in groups or clusters. A first case is usually followed by one, two, three or more cases, either in the same house or in adjoining or neighboring houses, the successive patients being sometimes related, more often not. Frequently in a cancer cluster all or the majority of the patients, whether related or not, are affected in the same organ or in the same part of the body, indicating very probably a common source of infection. Notwithstanding occasional increase in certain localities and decline in others, the relative frequence of regional incidence shows that same remarkable persistence which is characteristic of the "stations" of well known endemic diseases. Notwithstanding general progressive increase or decline, cancer exhibits, in its local incidence, noticeable fluctuations from year to year, such as are witnessed in all endemic diseases. Heredity is not a determining factor. The habitation of certain premises appears to be a factor of importance, at least while as yet undetermined cancerous conditions persist. Under the same roof, cancer in dog, cat, fowl or other domestic animal occasionally may be found in association with cancer in man, either preceding or following it. Certain helminths of animals (some occurring also in man) must be considered as possible mediate agents in the incidence of cancer. By their destructive activities these parasites often incite cell proliferation, and the lesions produced or the reparative hyperplasia that follows seem to be favorable factors in the development of cancer.

Cancer of Stomach with Nematode.—Bonne describes a case of cancer of the cardiac portion of the stomach in a rat. The stomach harbored a nematode worm, *Hepaticola gastrica*. This is the fourth case described of the combined presence in the cardiac portion of a rat's stomach of a cancer and *Hepaticola*. In the same rat a mammary fibro-adenoma was present.

Lancet, London

2: 215-264 (July 31) 1926

Mechanism of Pancreatic Secretion. J. Mellanby.—p. 215.
*Effects of Feeding Anterior Lobe Pituitary Extract to Children. H. Gardiner-Hill and J. F. Smith.—p. 219.
Secondary Jejunal Ulcers and Their Radiologic Diagnosis. S. G. Scott.—p. 222.
Use of Wedges for Elevating Loin in Gallstone Operations. G. G. Turner.—p. 224.
Vesical Calculus with Nucleus of Paraffin Wax. E. H. Shaw.—p. 225.

Effects of Feeding Anterior Lobe Pituitary Extract.—Gardiner-Hill and Smith are convinced that feeding of anterior lobe pituitary extracts by mouth appears to have some therapeutic value, although the number of cases which they quote is too small to allow of dogmatic statements. In cases of infantilism in which the epiphyses are not already fused, these extracts appear of value in influencing growth. They may prove of value in certain types of amenorrhea associated with minor degrees of infantilism. The effect of these extracts on the blood-sugar curve has been constant in all the cases which the authors have investigated, but in the present state of their knowledge they do not attempt to give an explanation of this.

2: 531-582 (Sept. 11) 1926

Physiology of Posture. R. Magnus.—p. 531.
New Growths in Thorax Differential Diagnosis from Tuberculosis. J. M. Johnston.—p. 537.
*Cerebrospinal Fever in Bombay. P. T. Patel.—p. 539.
*Infection with Bacillus Dysenteriae (Flexner). S. F. Breakey.—p. 541.
*Obstruction of Esophagus Caused by Persistent Ductus Arteriosus. A. J. Jex-Blake.—p. 542.
*Excessive Insulin Dosage in Diabetic Gangrene. H. F. Root.—p. 544.
*Case of Pneumococcal Meningitis Originating from Occult Sinusitis. I. F. King.—p. 545.
*Scarlet Fever Antitoxin in Case of Endocarditis and Myocarditis. E. S. Toogood.—p. 545.

Antimeningococcus Serum in Cerebrospinal Fever.—The analysis of 170 cases of epidemic meningitis convinced Patel that the antimeningococcus serum, when used by the subdural method of injection, in suitable doses and at proper intervals, is capable of reducing the period of illness, of preventing in large measure the chronic lesions and types of infection, of bringing about complete restoration of health in all but a very small number of the recovered, thus lessening the serious deforming and permanent consequences of meningitis, and of greatly diminishing the fatalities due to the disease.

Infection with Dysentery Bacillus.—Although the initial history in the case cited by Breakey pointed to some acute alimentary trouble, the divergence from the typical picture of dysentery was not so much in this direction as in the rapid developing of an intense toxemia producing a condition hardly, if at all, to be distinguished from the results of some gross cerebral lesion. There was no opportunity of confirming the diagnosis of infection by examination of the blood or of the organs post mortem, but the fact that the bacillus was readily isolated in considerable numbers from the feces indicates the extreme probability that the illness was essentially the result of this infection; and this opinion was likewise favored by the absence of pathologic evidence pointing to any other cause for the condition.

Obstruction of Esophagus by Ductus Arteriosus.—Jex-Blake reports the case of a dog that was slowly starved of food and of oxygen by the natural contraction of the ductus arteriosus. The esophagus and trachea passed between the ductus arteriosus and the arch of the aorta.

Excessive Insulin Dosage in Diabetic Gangrene.—In Root's case the immediate cause of death was hypoglycemia due to an overdose of insulin. A toe had been amputated because of gangrene. Three weeks later the leg was amputated below the knee. The stump became discolored and gangrenous, and the patient became weaker. Although the urine had been sugar-free constantly after the third day in the hospital, the dose of insulin was steadily increased in the attempt to get a normal morning blood sugar. At first, 60 units of insulin was given daily; then the dose was increased to 75, 105, 230 and finally 240 units. Four weeks elapsed from the commencement to the end of this treatment, but the prognosis is said to have been hopeless because of sepsis and uremia.

Pneumococcus Meningitis from Sinusitis.—In King's case the course of the disease was extremely rapid, the origin of the infection from the sinusitis was very definite and the existence of the sinusitis unsuspected.

Scarlet Fever Antitoxin in Heart Infection.—Toogood reports a case of severe infection of the heart, in which treatment with scarlet fever antitoxin was used, and was followed by complete recovery.

Archives de Médecine des Enfants, Paris

29: 377-440 (July) 1926

Organization of Children's Home. P. Rueda.—p. 377.
*Meningitis from Helminthiasis. G. Barraud.—p. 389.
Dysenteriform Colitis After Typhoid. L. Payan and M. Massot.—p. 401.
Case of Cardiotuberculous Cirrhosis. C. Voudouris.—p. 407.
The Hemophilia Question. J. Comby.—p. 413.

Meningitis and Pseudomeningitis from Helminths.—Barraud distinguishes two forms of meningeal reactions from intestinal worms. In one, the clinical signs are not accompanied by changes in the cerebrospinal fluid, while in the other there are hypercytosis and hyperalbuminosis. The first form represents meningism; the second, meningitis. The meningeal reactions are probably caused by parasitic toxins reaching the cerebrospinal fluid by way of the choroid plexuses or of other vessels. These toxins may produce lesions of the meninges, analogous to those from microbic toxins or from exogenous toxic substances. The parasite causing meningitis is almost always ascaris, rarely taenia, exceptionally oxyuris. It seems that the occurrence of helminth meningitis is largely a matter of constitution. It is observed most frequently in young children, in those with a history of convulsions or with alcoholic heredity. In meningitis of dubious origin, in which the usual measures fail, helminthagogue therapy should be tried.

Comptes Rendus de la Société de Biologie, Paris

95: 149-256 (June 25) 1926. Partial Index

*Asphyxia Polycythemia. L. Binet and R. Williamson.—p. 151.
*Nature of Hydatid Poison. Lemaire and Thiodet.—p. 166.
*Acid-Base Balance in Maternal and Fetal Blood. Lévy-Solal et al.—p. 185.
Survival of Transfused Red Corpuscles. E. Derom.—p. 244.
Regeneration of Red Corpuscles. A. Van den Eeckhout and J. Lahaye.—p. 248.

Polycythemia from Asphyxia.—Asphyxia was produced in chloralized dogs by way of mechanical obliteration of the trachea. On examination of the blood five minutes later the number of the red corpuscles was found to be increased by 1,000,000 or 1,500,000 per cubic millimeter. The polycythemia was manifest in all the animals. It developed gradually, and persisted over an hour after normal respiration had been reestablished.

The Nature of Hydatid Poison.—Lemaire and Thiodet report twenty-five new cases of echinococcosis in which the intradermal test was applied. False reactions were observed when the entire hydatid fluid was used, owing to the occurrence of a local peptone shock. The latter was avoided when a dialysate (from nine to twelve hours) was employed, which is free from proteins or colloids while yet containing the specific hydatid poison.

Acid-Base Balance in Maternal and Fetal Blood.—Lévy-Solal, Weismann-Netter and Dalsace studied the acid-base balance of the blood, withdrawn at the same time from the mother and from the placenta, in four cases of cesarean section. It was thus possible to eliminate the source of error from compression of the umbilical cord or asphyxia, which may increase the alkali reserve in the new-born, and from labor, during which the alkali reserve of the woman may decrease. The alkali reserve was much higher in the infant than in the mother; the p_H was the same in both. It is probable that the mechanism of regulation of the acid-base balance in the fetus is independent of that in the mother.

Lyon Chirurgical

23: 429-548 (July-Aug.) 1926

Technic for Radical Cure of Hallus Valgus. E. Juvara.—p. 429.
Aseptic Intestinal Anastomosis. W. C. Burket.—p. 443.
Influence of Periarterial Sympathectomy on Skin Grafts. J. Dalger.—p. 451.
Can an Obliterated Artery Become Permeable? R. Leriche.—p. 453.
Surgery of the Pelvic Sympathetic in Women. L. Michon.—p. 459.

Paris Médical

61: 141-152 (Aug. 21) 1926

*Lumbar Puncture in Otitic Meningitis. G. Portmann et al.—p. 141.
Paralysis from Antirabies Treatment. D. Paulian.—p. 148.

Value of Lumbar Puncture in Meningitis from Ear Disease.—Portmann, Moreau and Forton consider that lumbar puncture has little diagnostic or prognostic value in meningitis from disease of the ear. On account of the distance between the lumbar region and the seat of the infection the cerebrospinal fluid may present no changes. Therefore it is logical to replace the lumbar puncture by that of the subarachnoid spaces, close to the seat of the chief lesions. For decompression of the brain, permanent drainage of the subarachnoid space or cisterna should be preferred to temporary drainage by repeated lumbar punctures. Medicinals administered by the vein may influence the otitic meningitis better than when they are introduced by any other route.

Presse Médicale, Paris

34: 1073-1088 (Aug. 25) 1926

Anarchy of Cardiac Rhythm. A. Clerc and R. Lévy.—p. 1073.
Purification and Concentration of Therapeutic Serums. A. Besson and G. Ehringer.—p. 1075.
*Origin of Bilirubin. H. Hinglais.—p. 1078.

Recent Theories of Formation of Bilirubin Outside the Liver.—Hinglais found no proofs that biliary pigment is formed in the epithelial cells of the liver. On the contrary, there is evidence that the pigment may originate outside and independently of the liver cells. It is highly probable that bilirubin may be produced by cells of the reticulo-endothelial type. The limited number of experiments to date do not show that bilirubin may develop under the action of enzymes, outside any cells. Further research is needed to settle the question of the real origin of the biliary pigment.

Schweizerische medizinische Wochenschrift, Basel

56: 729-752 (July 31) 1926

*Fright Neuroses. R. Bing.—p. 729.
Hysterical Pseudoparkinsonism. O. Binswanger.—p. 735.
Chronic Anterior Poliomyelitis. R. F. v. Fischer.—p. 740.
Atrophy of Clinoid Processes in Cerebellopontile Tumors. K. M. Walthard.—p. 747.
*Hypnosis and Blood Sugar. A. Gigon et al.—p. 749.

Fright Neuroses.—Bing appreciates the fact that it is generally recognized now, that the majority of neuroses following physical or mental injury have nothing to do with the injury. Outside of a few instances with true organic lesions there is only one group which cannot be classified directly as "wish neurosis." This group could be called emotion rather than commotion neuroses. The symptoms arise immediately after some really frightful event and may consist in confusion, stupor or a maniacal condition which may be followed by a depressive state. Most of these patients have a neurotic history. Yet he advises a quick and final compensation (before any other treatment) in order to prevent development of a wish neurosis. Much depends upon the first treatment. Compassion and demonstrations of affection are the worst method. Kaufmann in Germany and Clovis Vincent in France independently used painful faradic currents in treatment of war neuroses, since such syndromes were only a means to keep out of the trenches. Vincent was indicted in 1916 before a court martial for having thus mistreated the shell shocked heroes. He was freed on proving that he had returned up to that time 10,000 of these invalids to full service. The court declared a pain which cures is no mistreatment.

Hypnosis and Blood Sugar.—Gigon, Aigner and Brauch hypnotized a few patients with grave diabetes who had previously been treated with insulin. Suggestion of an injection or of a better production of insulin was followed by a lowering of the blood sugar. It fell in one of them to 0.12 per cent and the urine was sugar-free. Acetone excretion was not influenced.

Archivos Latino-Amer. de Pediatría, Buenos Aires

20: 315-380 (June) 1926

*Peripheral Facial Paralysis and Acute Meningitis. L. Morquio.—p. 315.
*Congenital Syphilis of Dementia Type. M. A. Jáureguy.—p. 320.
Scurvy in an Infant. Ramón Garín Sanchez.—p. 326.
Some Clinical Notes. J. Damianovich.—p. 348.

Facial Paralysis and Acute Meningitis.—Morquio reports a case in which facial paralysis and acute meningitis persisted for a few days and then subsided, after lumbar puncture had

released a limpid fluid showing lymphocytosis. There was nothing otherwise to suggest epidemic disease or otitis. Another child developed acute serous meningitis secondary to acute otitis, with recovery in about ten days.

Congenital Syphilis with Dementia.—The first of Jáureguy's patients had developed approximately normally until the age of 6; then the mental faculties declined. The two others were in an institution for the feebleminded. All presented stigmata of congenital syphilis.

Boletin de la Soc. de Cirurgía de Chile, Santiago

4: 81-95 (June 23) 1926

Subtotal Gastrectomy; Three Cases. Grove et al.—p. 81.
*Sympathectomy for Varicose Ulcers. F. Opazo.—p. 87.
Deciduoma and Chorio-Epithelioma. C. Mönckeberg—p. 89.
Osteosarcoma of the Humerus. A. Inostrosa.—p. 94.

Remote Results of Sympathectomy for Varicose Ulcers.—Opazo reports complete and probably permanent cure in two cases long under observation. One was an old rebellious leg ulcer, and the other a trophic lesion in a syphilitic soil that did not yield to specific treatment.

Gaceta Médica de Caracas, Venezuela

33: 145-160 (May 31) 1926

*Lymphogranulomatosis. F. A. Risquez.—p. 145.
Biology of Tigrito Spider. J. Grateral Monserrate.—p. 148.

Inguinal Granuloma.—Risquez says that climatic bubo is a new disease at Caracas, but it has assumed an epidemic character, and can almost be said to be endemic. Twenty-two cases were encountered in 1924, but all were imported. In the last year he has seen six cases, none imported, and Flammerich fourteen. No treatment has proved effectual to date; surgical intervention seems unnecessary and even dangerous.

Lisboa Médica, Lisbon

3: 273-324 (June) 1926

*Protein Therapy in Gonococcal Conjunctivitis. A. A. Gonçalves.—p. 273.
*Insulin in Denutrition. F. Fonseca.—p. 280.
Complete Dextrocardia from Diaphragm Anomaly. E. Coelho.—p. 292.
Early Diagnosis of Tuberculous Sacrocoxitis. A. de Meneses.—p. 310.

Protein Therapy in Gonococcal Conjunctivitis.—Gonçalves reports results surpassing all anticipations in his eleven cases in adults. All were treated by intravenous injection of 1 cc. of a suspension of 75,000,000 typhoid bacilli. The stay in the hospital averaged thirty-three days in comparison to the seventy-three days with other methods of treatment. The injections were repeated at intervals of three to seven days. The reaction developed in half an hour, with a chill, malaise, headache, fever, and sometimes vomiting.

Insulin in Treatment of Denutrition in Adults.—All of Fonseca's thirteen patients in extreme denutrition treated with insulin gained in weight. It was injected fifteen or thirty minutes before the two principal meals of the day, from 5 units at first to 15 or 20. Diuresis is not modified by the insulin, but it seems to increase the alkali reserve of the plasma, and modify the p_H of the urine.

Archiv für Ophthalmologie, Berlin

117: 221-402 (July 21) 1926. Partial Index

Syphilis of Retinal Vessels. E. v. Hippel.—p. 221.
Annular Opacities of the Cornea. A. Lutz.—p. 231.
Acute Trachoma. Ch. Oguchi.—p. 236.
Center of Visual Axes. S. Funaishi.—p. 296.
Metastatic Sarcoma of the Choroid. H. H. Elschnig.—p. 316.
Nystagmus. J. Ohm.—p. 348.
*Errors in Study of Keratitis. P. Busse.—p. 366.
*Sympathetic Ophthalmia. T. Abe.—p. 375.

Errors in the Study of Keratitis.—Busse shows that there is not an immigration of leukocytes into the cornea in keratitis.

Experiments on Sympathetic Ophthalmia Due to the Herpes Virus, with Especial Reference to Its Conduction Path.—Abe inoculated rabbits with herpes virus and obtained von Szily's sympathetic ophthalmia in 30 per cent of cases. From the anatomic changes in the eye he concludes that sympathetic ophthalmia in man cannot be due to herpes virus. The two diseases resemble each other in the fact that the disease of the eye first infected later calls forth the same symptoms in the previously healthy eye. The virus is in all probability transmitted along the optic nerve over the chiasm.

Beiträge zur Klinik der Tuberkulose, Berlin

63: 633-1022 (July 21) 1926

*Heterogenetic Tuberculin Allergy. A. Adam.—p. 635.
Infection and Lymph Vessels of the Lungs. A. Borm.—p. 646.
Demonstrating Lung Changes at Dissection. L. Brauer and Th. Fahr.—p. 659.
*Lupus Carcinoma. F. Dietel.—p. 667.
Tuberculosis of Female Genital Organs. G. Döderlein.—p. 672.
Roentgen-Ray Treatment of Pulmonary Tuberculosis. M. t. D. Koolman and M. Kretschmer.—p. 684.
Atypical Tuberculosis. A. Esser.—p. 699.
Production of Local Sensitiveness to Tuberculin. H. Fernbach.—p. 730.
Tuberculosis of Genitals and Peritoneum in the Woman. O. Gragert.—p. 768.
Frequency of Tuberculosis. Hamburger and Mayrhofer-Grünbühel.—p. 778.
*Mineral Metabolism and Tuberculosis. H. Heinelt.—p. 799.
*Combined Forms of Pulmonary Tuberculosis. Henius and Basch.—p. 816.
*Insulin in Pulmonary Tuberculosis. S. Hofhauser and E. Schön.—p. 827.
Disinfection of Sputum. K. W. Jötten and F. Sartorius.—p. 831.
Tuberculosis and Pregnancy. H. Jünger.—p. 838.
Skin Tuberculosis in Pomerania. W. Leipold.—p. 857.
Tuberculous Labyrinthitis. F. Marx.—p. 871.
Tuberculosis of Genital Organs in the Woman. A. Mayer.—p. 874.
*Follow-Up Examinations in Pulmonary Tuberculosis. R. Oeckinghaus.—p. 883.
Tuberculin Sensitiveness. K. Ossoinig.—p. 895.
Tuberculosis of Axillary Lymph Nodes in Tumors of the Mammary Gland. P. Prym.—p. 900.
Gold Treatment of Lupus Erythematodes. S. Rothman.—p. 906.
Allergy and Bronchial Asthma. I. W. Samson.—p. 920.
Pregnancy and Pulmonary Tuberculosis. W. Schmitt.—p. 929.
Treatment of Skin Tuberculosis. M. Schubert.—p. 939.
Progressive Scleroperikeratitis and Tuberculosis. A. v. Szily.—p. 947.
Pulmonary Tuberculosis and Lymphocytosis. J. Weicksel.—p. 967.
Procutins. P. Wichmann.—p. 974.
Pathologic Anatomy of Tuberculosis. H. Wurm.—p. 977.
*Specificity of Tuberculin Reaction. K. Zieler and J. Hämel.—p. 991.
Tuberculosis Immunity. H. Much.—p. 1011.

Heterogenetic Tuberculin Allergy, and Its Importance for Tuberculin Sensitiveness.—Adam demonstrated in three cases that previous injection of colon bacillus vaccine in infants who had not reacted to tuberculin caused a distinct tuberculin reaction, in one case after injection of only 1 mg. of tuberculin. He explains the nonspecific induction of tuberculin sensitiveness as a heterogenetic production of allergy. The tuberculin sensitiveness is understood as a special type of antigen reaction.

Carcinoma on a Ground of Lupus Vulgaris.—Dietel reports a fatal case of lupus carcinoma without metastasis. The carcinoma developed from a cicatricial ulcer, but, owing to the multiplicity of therapeutic measures over years, it is impossible to attribute it with certainty to the lupus or to the treatments with rays or corrosives.

Mineral Metabolism in Tuberculosis.—Heinelt studied phosphorus, calcium and magnesium metabolism in pulmonary tuberculosis. He emphasizes the importance of psychic processes on the progress of chronic pulmonary tuberculosis. One of the patients had maintained a constant weight for three months. Impressed with the idea that a new kind of treatment had been started, he gained 10 kg. in eight weeks on a similar diet.

Frequency of Combined Forms of Pulmonary Tuberculosis.—Henius and Basch studied nine typical cases of combined forms of pulmonary tuberculosis. They maintain that, while pure cases of chronic acinonodular tuberculosis occur, they are more uncommon than the combined forms.

Treatment of Nondiabetic Pulmonary Diseases with Insulin.—Hofhauser and Schön obtained improvement in appetite and increase in weight in several nondiabetic patients, suffering from pulmonary tuberculosis, by subcutaneous injection of insulin.

Follow-Up Examinations of Pulmonary Patients.—Oeckinghaus reviews the fate of 200 cases treated from 1905 to 1908

in the welfare station at Bonn. One hundred and twenty-three patients are still alive. 30 per cent died from tuberculosis, 8 per cent from other diseases, in 5 per cent the condition grew worse, in 7 per cent it remained unchanged and in 50 per cent improvement was obtained. Forty-one additional patients treated during the same period could not be traced.

Specificity of the Tuberculin Reaction.—Zieler and Hämel hold that the tuberculin reaction is specific. Only persons infected with tuberculosis react to minute quantities (0.1 mg. or less) of tuberculin, persons absolutely free from tuberculosis never do so. Skin reactions provoked by previous inoculation with bacterial substances are the same in both tuberculous and tuberculosis-free subjects and must be considered not as specific tuberculin but as nonspecific protein reactions.

Dermatologische Wochenschrift, Leipzig

83: 1015-1054 (July 10) 1926

*Stomatitis and Potassium Chlorate. P. G. Unna.—p. 1015.
Sense of Smell in the Louse. W. Pick.—p. 1020.
Carcinoma of the Skin. C'tn. A. Ravogli.—p. 1026.

Prophylaxis and Therapy of Gingivitis and Stomatitis with Especial Reference to Potassium Chlorate.—Unna has used potassium chlorate as a toothpowder in the treatment of stomatitis for forty years. He never observed toxic effects.

Deutsches Archiv für klinische Medizin, Leipzig

152: 1-112 (July) 1926

Pernicious Anemia Following Typhoid. F. Reiche.—p. 1.
*Anisocoria After Encephalitis. K. Hansen and Goldhofer.—p. 12.
*Idiosyncrasy. H. Günther.—p. 21.
Aneurysma Dissecans and Hemoglobinuria. A. Hanser.—p. 61.
Xanthoprotein Test in Protein-Free Serum. E. Becher and E. Herrmann. —p. 82.
Stained Blood Slides. A. Piney.—p. 99.

Anisocoria and Other Unilateral Changes After Encephalitis.—Hansen and Goldhofer describe asymmetric disturbances of the vegetative system in ten patients with sequels of encephalitis. One of these phenomena was a difference in the pupils. On the mydriatic side the secretion of sweat, tears and saliva, erection of hairs, tonus of blood vessels, rigidity and tremor were increased, the redness, temperature and resistance of the skin decreased. The degree of these changes was different. Some of them became evident only after injection of epinephrine hydrochloride or pilocarpine. Yet they always occurred on the side of the mydriasis.

Idiosyncrasy.—Günther does not regard idiosyncrasy as increased irritability but as a constitutionally changed (allergic) irritability. He analyzes three groups of such reactions: The first—pyretic—responds with a chill and fever, local pains and a rash. The group of "oxyphils" inclines to hives, asthma and angioneurotic edema, together with an eosinophilia of the blood. The third group (herpetic) is more frequent in men and is characterized by a herpes of the lips and especially of the sex organs. The bullous eruption observed by him after iodides in endocarditis is explained as simple superirritability. Yet it is possible that a true idiosyncrasy against iodine also exists.

Deutsche medizinische Wochenschrift, Berlin

52: 1325-1368 (Aug. 6) 1926

Compensation Neurosis and Moral Imbecility. P. Schröder.—p. 1325.
*Ovarian Hormone and Metabolism. E. Laqueur et al.—p. 1331.
Function of Ovary. A. Heyn.—p. 1333.
*Injection of Calcium and Hypnosis. F. Glaser.—p. 1336.
*Diphtheria Immunization by Mouth. H. Reiter and M. Soldin.—p. 1337.
*Insulin, Phagocytosis and Complement. G. Bayer and O. Form.—p. 1338
Arthritis and Lymphadenitis. F. Hirsch.—p. 1339.
Mind in Internal Diseases. E. Jacobi.—p. 1340.
Cystic Tumor of Penis. Mensch.—p. 1341.
Tumors of Prostate in Chemical Workers. R. Oppenheimer.—p. 1342.
Hemorrhagic Nephritis in Children. Hanssen.—p. 1343.
Isacen. R. F. Weiss.—p. 1343.
Proprietary and Secret Preparations. C. Hoffmann.—p. 1345.
Treatment of Tabes and Paralysis. K. Löwenstein.—p. 1346.
Sex and Schools. A. Buschke and M. Gumpert.—p. 1348.
Physicians' Insurance. W. Gotthilf.—p. 1349.
A Letter by Jenner. L. Darmstaedter.—p. 1350.
Kinship Between Man and Apes. J. Schwalbe.—p. 1351.

Ovarian Hormone and Metabolism.—Laqueur, Hart and de Jongh observed an increased metabolism in castrated female rats after injections of ovarian hormone. The hormone is quite stable. The crude preparation in oil resists heating to 360 C.; the pure aqueous solution resists 170 C. It may be boiled in 26 per cent potassium hydroxide or in 26 per cent sulphuric acid. It is easily adsorbed—even by a filter paper. It resists pepsin and trypsin, but hardly acts by mouth—perhaps because of adsorption.

Injection of Calcium.—Glaser points out that hypnosis as well as change of mood may induce similar changes in the blood calcium as an intravenous injection of calcium chloride. Since the result may be the same, a few kind words may be preferable to injections in nervous patients.

Diphtheria Immunization by Mouth.—Reiter and Soldin administered to children and infants 1 Gm. of sodium benzoate in fruit juice by mouth in order to increase the permeability of the intestine. One hour later they gave the children 2 cc. of a diphtheria toxin-antitoxin mixture in an equal volume of milk. The procedure was repeated after a week, using 3 cc. of toxin-antitoxin and after another week with 5 cc. of it. The results were encouraging in the majority of the children; the immunity began in about five weeks and lasted at least six months.

Insulin, Phagocytosis and Complement.—Bayer and Form observed an increase in the opsonic index in pancreatectomized dogs after injections of insulin. The complement titer also rose to the preoperative level in animals which were still in a good condition.

Deutsche Zeitschrift für Chirurgie, Leipzig

196: 241-352 (July) 1926

Sauerbruch's Operation to Put the Amputated Leg, Reversed, in the Place of the Excised Femur. Fründ.—p. 241. Idem. F. Krampf. —p. 246.
Sport Injuries. Wiewiorowski.—p. 255.
Plastic Repair of Fingers. A. Zollinger.—p. 271.
Conservative Treatment of Dislocation of Semilunar Bone. A. Ujma. —p. 288.
*Compression Fracture of Lumbar Spine. W. Mull.—p. 291.
Fracture of Transverse Process of Vertebra. M. Schiessl.—p. 297.
Total Dislocation of Clavicle. F. Böhm.—p. 307.
An Improved Method in Osteosynthesis. T. Mayeda.—p. 311.
Multiple Osteomas of Capsule of Shoulder Joint. S. Simon.—p. 318.
Lipoma of Joint. F. Metzler.—p. 326.
Tuberculosis of Pubic Bone. M. Madlener.—p. 329.
Multiple Paratyphoid N Osteomyelitis. S. Matrossoff.—p. 336.
Deep Roentgenotherapy of Surgical Tuberculosis. Loewenstamm.—p. 340.
Cervical Rib Producing Raynaud's Syndrome. J. Loessl.—p. 346.

Compression Fracture of the Lumbar Spine from Slight Trauma.—Mull reports the case of a girl, aged 17, in whom a very slight trauma during play caused a compression fracture of the second lumbar vertebra. The fracture appears to have been due to strain, in a moment of relaxation of the musculature. He inquires whether activity of the muscles may bear a relation to fractures other than those of the spine.

Klinische Wochenschrift, Berlin

5: 1449-1496 (Aug. 6) 1926

*Varicose Syndrome. G. Magnus.—p. 1449.
Treatment of Diabetes. D. Adlersberg and O. Porges.—p. 1451.
Blood Group Antigen. B. Brahn and F. Schiff.—p. 1455.
Ventricle Rhythm in Auricular Fibrillation. E. Mosler and H. Sachs. —p. 1456.
Glycemia in Gastric Ulcer and Cancer. G. Scherk.—p. 1459.
Degwitz' Serum. S. Progulski and F. Redlich.—p. 1461.
Heliotherapy. K. G. Ledermann and P. S. Meyer.—p. 1462.
New Leg Reflexes. E. Trömner.—p. 1464.
Antagonism of Infections. A. Joseph.—p. 1466.
*Musset Sign. W. W. Winogradoff.—p. 1467.
Crawling Phenomenon in New-Born. J. Bauer.—p. 1468.
Graph of Differential Count. H. Schäfer.—p. 1469.
Relaxation of Diaphragm. L. Reich.—p. 1470.
Mendel Reflex of Hand. L. Jacobsohn-Lask.—p. 1471.
*Glycolysis and Blood Coagulation. B. Stuber and K. Lang.—p. 1471.
*Anaphylatoxin in Guinea-Pig Serum. H. Dold.—p. 1472.
*Peroxidase in Serum. S. Kwasniewski and N. Henning.—p. 1472.
Treatment of Insufficiency of Liver. P. Herszky.—p. 1473.
*Late Syphilis of Joints. H. Schlesinger.—p. 1474.
Pseudomyxoma and Endometriosis. E. v. Gierke.—p. 1476.
Health Statistics. K. Freudenberg.—p. 1495.

Varicose Syndrome.—Magnus finds that simple hydraulic disturbances do not explain varicosities. The insufficiency of the venous valves is only an important symptom of the condition. The blood in varicose veins flows in the centrifugal direction, except when the patient is in the horizontal position; hence the good results of proximal ligation of the saphenous vein. If it fails (30 per cent of cases), the best method is extirpation of the varicosities. In specimens he found regularly a straight vein with good valves accompanying the varicose complex.

Musset Sign.—Winogradoff observed Musset's sign (rhythmic jerking of the head) not only in aortic insufficiency and aneurysm, but also in insufficiency of the tricuspid valve due to mitral stenosis.

Glycolysis and Blood Coagulation.—Stuber and Lang confirmed the observation of authors who noted a parallelism between the inhibition of glycolysis and of blood coagulation. On investigating the mechanism of coagulation they found that coagulating blood plasma produces lactic acid and carbon dioxide and uses up oxygen from dextrose. Anticoagulants prevented the second (oxydative) phase of dextrose cleavage; addition of calcium restored it, as well as the coagulability. The lactic acid causes a decrease of the alkali reserve and shifts the reaction toward the iso-electric point of plasma proteins. Thus blood coagulation may be regarded as rigor mortis of the blood.

Anaphylatoxin Produced by Storage of Guinea-Pig Serum.—Dold kept serum from guinea-pigs for a few days in Petri dishes to increase its contact with air and induce flocculation. Intravenous injection of 4 to 5 cc. of such serums killed some of the guinea-pigs under symptoms resembling anaphylactic shock.

Peroxidase in Serum.—Kwasniewski and Henning found a peroxidase in the majority of serums from patients with myelogenous leukemia. The reaction may be slightly positive in leukocytosis or in lymphatic leukemia and probably indicates the degree of destruction of leukocytes.

Late Syphilis of Joints.—Schlesinger regards iodides as the best remedy in syphilitic arthritis. Intra-articular injections of a few cubic centimeters of a 10 per cent solution of sodium iodide sometimes give excellent results. Mercury, bismuth follow in efficiency. Arsphenamine may cause an exacerbation. Malaria followed by specific treatment gave a satisfactory result in one case.

Medizinische Klinik, Berlin

22: 1209-1246 (Aug. 6) 1926

Danger from Mercury Vapor. A. Stock.—p. 1209. C'td.
Comment. W. His.—p. 1212.
Kidney in Arteriosclerotic Hypertension. O. Klein.—p. 1212.
*Psychogenic Fever. F. Deutsch.—p. 1213.
Eye Salves. L. v. Liebermann.—p. 1216.
Visualization of Gallbladder. E. Rachwalsky.—p. 1218.
Microdetermination of Blood Sugar. E. Kaufmann.—p. 1219.
Electrocauterization in Hypertrichosis. E. Last.—p. 1220.
Varico-Atonic Syndrome. F. Schlunk.—p. 1221.
Ruptures of Pleura. F. Koch.—p. 1226.
Goiter in School Children. C. Lämel.—p. 1226.
*Recurrens in Rabbits with Syphilis and Yaws. H. Schlossberger and R. Prigge.—p. 1227.
Treatment of Hemorrhoids. L. Gross.—p. 1230.
Tuberculosis After Gas Poisoning. v. Schnizer.—p. 1231.
Mycoses of Skin. F. Pinkus.—p. 1232.
Bismuth in Syphilis. J. Urbach.—p. 1233.
Measuring the Body Temperature. W. Felgentraeger.—p. 1245.

Psychogenic Fever.—Deutsch noted a higher axillary temperature in one patient on the days when she received no medical attention, in another patient on the days of medical examination. In these and other patients with apparently psychogenic slight fever, the temperature in the mouth was not higher than in the axilla. He believes that vasomotor disturbances explain the phonomenon. Hypnosis controlled the fever in some of the patients.

Recurrens Infection in Rabbits with Syphilis and Yaws.—Schlossberger and Prigge succeeded in infecting with recurrent fever only some of their rabbits affected with syphilis or frambesia. The recurrens spirochetes disappeared rapidly from the blood, but persisted long in the chancres, which healed rather later than usual. They conclude that the recurrens treatment of general paralysis is only a nonspecific therapy. It is also possible that the infection increases the permeability of the meninges for arsphenamine.

Münchener medizinische Wochenschrift, Munich

73: 1263-1306 (July 30) 1926

*Syphilitic Aortitis. F. Moritz.—p. 1263.
Tuberculosis of Infants and Children. Oberndorfer.—p. 1266.
Allergic Test in Leprosy. W. H. Hoffmann.—p. 1269.
*Duodenal Tubage. W. Stepp.—p. 1270.
Diphtheria Problems. H. Dold.—p. 1271.
*"Blindness" in Sierra Juarez. M. Weihmann.—p. 1271.
Mineral Water and Tadpoles. Schneyer.—p. 1273.
*Gymnastics in Orthostatic Albuminuria. O. Wiese.—p. 1275.
*Madder and Rickets. A. Bauer.—p. 1276.
Pain and Blood Pressure. H. Curschmann.—p. 1276.
Prosthesis for Femur. E. Schilcher.—p. 1277.
Hygienic Exposition at Düsseldorf. O. Neustätter.—p. 1278.
*Cholecystography. H. Stegemann.—p. 1281.
*Retroportation in the Colon. G. Schwarz.—p. 1284.
Balneo- and Climatotherapy. H. Weskott.—p. 1287.
Infants' Nurses. H. Brüning.—p. 1289.

Syphilitic Aortitis.—Moritz finds subjective symptoms comparatively rare in a beginning aortitis. Accentuation of the second aortic sound without corresponding increase in blood pressure—and frequently with a systolic murmur—is an important sign. Differences between the pulse of the two carotids or the two radial arteries, pulsation in the jugular fossa and roentgen examination confirm the diagnosis. The Wassermann test was negative in about one eighth of the patients. On the other hand, syphilitic aortitis was found in one half of the men and one third of the women with positive Wassermann reaction. An energetic specific treatment with arsphenamine, bismuth, iodides and mercury continued for years gives good results. He has observed a patient with a beginning aneurysm for fifteen years and the patient feels better than he did at the beginning.

Duodenal Tubage.—Stepp introduces the tube through the nose (to avoid gagging) to the mark 55; then he injects 25 cc. of a warm emulsion of oil (oil of almonds 20; gummi acaciae 10; aq. ad 200) and asks the patient to lie on his right side and take hold of the tube at about 10 cm. distance from the nose, letting it glide down slowly and almost spontaneously (about 10 cm. in ten minutes). In all but six of his fifty-nine patients bile was obtained on the average in twenty-five minutes. The oil introduced into the stomach does not induce contraction of the gallbladder.

"Blindness" in Sierra Juarez.—Weihmann had been requested by the governor of Oaxaca (Mexico) to investigate the endemic blindness among the degenerate Indians of certain hill regions. He diagnosed the disease as chronic iridochoroiditis due to loss of blood from bat's bites, lack of food (the domestic animals had been gradually killed by the bats) and various diseases.

Gymnastics in Orthostatic Albuminuria.—Wiese saw orthostatic albuminuria regularly disappear after a few months of crawling exercises. He described especially a gliding exercise. The initial position is kneeling with the body slanting downward so that the chin almost touches the floor. It diminishes the kyphosis of the thoracic spine and the lordosis of the lumbar. It also has a favorable influence on the circulation.

Madder and Rickets.—Bauer kept a rabbit in a sty with northern exposure and a red window. The rabbit's bones failed to take a red color when the animal was fed with madder. The bones of other rabbits, exposed to sunlight through blue or red glass, became stained. The blue-light animals developed better.

Cholecystography.—Stegemann administers 6 Gm. of sodium tetrabromophenolphthalein in 200 cc. of water by the rectum. The rectum must be prepared by opium suppositories. Suppositories of the contrast substance were not tolerated.

Retroportation in Colon.—Schwarz injected 250 cc. of a starch solution containing barium sulphate into the rectum. The mass moved orally. The more constipated the patient, the farther the barium reached. It was sometimes found in

the cecum after twenty-four hours. This explains tarry stools in hemorrhages of the distal parts of the colon. Active spastic constipation is better explained by these observations.

Wiener klinische Wochenschrift, Vienna

39: 909-936 (Aug. 5) 1926

*Accidents in Pneumothorax. K. Schuberth.—p. 909.
Cure After Resection for Gastric Cancer. L. Schönbauer and R. Friedel. —p. 912.
*Constitution and Hypertrophic Prostate. P. Blatt.—p. 914.
*Paralysis and Malaria in Turkey. F. Kerim.—p. 915.
Macroscopic and Microscopic Fate. C. Widmer.—p. 918.
*Surgery of Constipation. H. Finsterer.—p. 924.
Acute Otitis Media. O. Beck.—p. 926.
Tuberculosis of Lymph Nodes and Tendon Sheaths. L. Schönbauer. Supp.—pp. 1-12.

Accidents in Pneumothorax.—Schuberth describes a few accidents, especially a spontaneous pneumothorax of the other side, which occurred during pneumothorax treatment. Persistence of fever after an artificial pneumothorax has been instituted always indicates a serious condition: either a purulent exudate or a lesion of the other side. In one of his patients the pleural puncture yielded repeatedly a sterile exudate, while the pus was walled off by adhesions. The patient died from the empyema. In a spontaneous contralateral pneumothorax morphine, oxygen inhalation and camphor are indicated. Puncture may become necessary.

Constitution and Hypertrophic Prostate.—Blatt draws attention to the softness and smoothness of skin found in the majority of patients with hypertrophy of the prostate. Most of them are of the "digestive" type, practically none of the "cerebral" type. Only 22 per cent of these patients had hair on the chest.

Paralysis and Malaria in Turkey.—Kerim reports statistics of the Turkish asylum in Constantinople. Paralysis is less frequent in Turks than in other nationalities and much less frequent in women (2.48 per cent) than in men (6.55 per cent). More than 80 per cent (probably 90 per cent) of his patients had certainly not been treated at all for syphilis.

Surgery of Constipation.—Finsterer concludes his extensive survey of the theoretic basis, indications and results of colonectomy in chronic constipation.

Zeitschrift für Krebsforschung, Berlin

23: 399-510 (July 28) 1926

Tumor in Abdominal Wall with Banded Nuclei. K. Hille.—p. 399.
*Stomach Lesions in Tar-Painted Rats. L. Puhr.—p. 407.
Carcinosarcoma of the Thyroid. R. Kuntschik.—p. 416.
*Association of Cancer and Tuberculosis. H. Hamperl.—p. 430.
Incipient Malignant Transformation of Paget's Disease of the Nipple. P. Heilmann.—p. 446.
Oncolysis in Diagnosis of Tumors. G. C. Peracchia.—p. 453.
*Embryonal Tissue and Cancer. V. Bisceglie.—p. 463.
*The Constitution in Relation to Cancer. H. Auler.—p. 473.
A Carcinoma in a Duck. H. Hook.—p. 482.
Parasitic Etiology of Cancer. O. Schmidt.—p. 488. Comment. F. Blumenthal.—p. 495.
*Experimental Transformation of Granulomas. A. Pickhan.—p. 496.
The Bacteria in Mouse Carcinomas. F. Kauffmann.—p. 502.

Stomach Changes in Tar-Painted Rats.—In Puhr's experiments on twenty rats, the skin showed no pathologic changes, but in 55 per cent there was proliferation of the epithelium of the pre-stomach. Hyperplasia was manifest when the tar had been applied for twenty-six days; papillomas, thirty-two days, and ulceration, forty-four days. Fibiger has already called attention to the predisposition to inflammatory tumor-like reactions in the pre-stomach of rats. Puhr remarks in conclusion that elimination of the elements of the tar through the gastric mucosa may supplement locally the general effect of the tar on the organism by whatever route it is administered (skin, rectum).

Association of Cancer and Tuberculosis in Digestive Tract.—In none of Hamperl's six cases was there florid tuberculosis. In four, the cancer had probably developed in the margin of an old tuberculous ulceration; in the other two, the cancer seemed to be the primary lesion.

Embryonal Tissue and Experimental Cancer.—The filtrate from a mouse carcinoma was added to mashed tissue of fowl and mouse embryos and the mixture was injected in fowls and mice, respectively. Neoplasms of a sarcoma type developed in the fowls, with metastasis in one; but no tumors developed in the mice. Possibly the embryonal tissue was not young enough in the experiments on the mice. Bisceglie comments that certain facts observed seem to suggest that some chemical principle is responsible for malignant proliferation of previously normal cells. This chemical principle develops from alterations of the local metabolism by injurious influences, tar, roentgen rays, etc., and it seems to exist in certain cells of the embryo of certain species at certain times. It displays its cancer-inducing property only when there is some biochemical predisposition on the part of the cells.

The Constitution from the Cancer Standpoint.—Auler regards the endothelial cells in the lymph as responsible for the transplantability of malignant disease. When the regional lymph glands were removed, after tumors had formed from inoculation of rats with lymph from a cancer patient, the tumors retrogressed more or less completely. Removal of the axillary and inguinal lymph nodes in normal rats seemed to prevent the development of a tumor when the animals were inoculated with tumor tissue later. A large proportion of the inoculations were negative, and in the positive cases it was discovered that the operation on the lymph glands had not been as complete as intended. Roentgen irradiation of the axillary and inguinal glands seemed to act even more effectually than their removal in inhibiting tumor growth. The assumption that certain elements of the lymph glands are important from the standpoint of the development of cancer is sustained by further experiences related. Cancer tissue loses rapidly its malignant property, it dies when separated from the vital body juices. Drugs which act on the capillary endothelial cell (lead, iodine, copper) may aid in combating cancer. The predisposition to malignant disease is afforded by the condition of the endothelial cells of a tissue group isolated by some irritation. The etiologic factor is probably some product generated by parasites or micro-organisms or products of fermentation formed in the local stasis. This etiologic factor is transplantable provided the species-specific predisposition to malignant disease is present.

Infusorial Earth Granuloma and Its Artificial Modification.—Pickham injected Hü bacteria, cultured from a sarcoma on the thigh of a patient, into infusorial earth granulomas on guinea-pigs. This changed the character of the granuloma completely, giant cells disappearing, the tumor rapidly increasing in size, and the tissues assuming the blastoma character.

Zeitschrift für Urologische Chirurgie, Berlin

20: 127-336 (Aug. 18) 1926

*Nephrotomy. A. Roseno.—p. 127.
Empyema of Ureteral Stump. R. Fronstein.—p. 183.
Renal Function Test with Carbamid. B. Radó and I. Deutsch.—p. 191.
Duplication of Ureters. C. H. Ludowigs.—p. 203.
Methemoglobinuria in Grawitz's Tumor. Nicolas.—p. 212.
Perforation into the Bladder in Appendicitis. W. Boss.—p. 215.
Freyer's Prostatectomy. R. Fronstein and G. Meschebowski.—p. 222.
Tumors of the Ureters. J. Gottlieb.—p. 230.
Kidney Carbuncle. A. W. Smirnow.—p. 243.
Operations for Horse Shoe Kidney. A. Fischer.—p. 257.

Nephrotomy.—Roseno's study is based on animal experiments and 234 clinical cases. He approves of early nephrotomy for diagnosis when tuberculosis or tumor is suspected and affirms that the dangers of the operation are considerably reduced by giving careful attention to stopping the bleeding from the divided vessels in Bertin's columns.

Zentralblatt für Chirurgie, Leipzig

53: 2129-2192 (Aug. 21) 1926

Traumatic Hernia of Diaphragm. E. Kreuter.—p. 2130.
Lateral Apposition of Fibula in Tibial Defects. O. Stracker.—p. 2132.
Huge Lipoma of Scrotum. V. Gussew.—p. 2134.
Liquefaction of Fatty Tissue and Softening of Scars. J. Roos.—p. 2136.
Retroperitoneal Tumor. F. Dannheisser.—p. 2145.
*Accessory Pancreas in Stomach Wall. K. Griep.—p. 2147.
Diverticulum of Ureter in Cancer of Uterus. S. Nikolić.—p. 2150.

Clinical Importance of an Accessory Pancreas in the Stomach Wall.—Griep presents two new cases. In spite of the

embryonic origin of the condition, the symptoms first appeared at an advanced age. The clinical symptoms resembled ulcer or cancer of the stomach or gallstones. Resection was made at the pyloric ring. The operation is also a preventive measure against cancer, since, in the opinion of some, the accessory pancreas may later lead to cancer of the stomach.

Zentralblatt für Gynäkologie, Berlin

50: 2065-2120 (Aug. 7) 1926

The German Woman After the War. H. Sellheim.—p. 2065.
*Dilatation in Dysmenorrhea. B. Schwoerer and R. Wichmann.—p. 2075.
Born-Fraenkel-Schröder's Menstruation Theory. A. Greil.—p. 2080.
Dienst's Pregnancy Test. H. Grossmann and J. Mescwinkel.—p. 2095.
Decapitation with Blond's Finger Cap. A. Ecke.—p. 2098.
Traumatic Neurosis After Appendicitis in the Menopause. G. v. Wolff.—p. 2107.
Improved Pubeotomy Needle. J. Malfatti.—p. 2109.
True Cyst of the Spleen. O. Mondré.—p. 2111.
Simplified Vaginal Speculum. P. I. Silin.—p. 2114.

Dilation in Dysmenorrhea.—Schwoerer and Wichmann have used Menge's method of dilation of the uterus for dysmenorrhea since 1908 with improvement or cure in 84 per cent of cases. Hypersensitivity of the nervous system, psychic factors and genital hypoplasia account for most of the failures.

Klinicheskaya Meditsina, Moscow

4: 201-244 (June) 1926

Cytodiagnosis as Clinical Measure. A. G. Alekseeff.—p. 201.
Physiotherapy of Diseases of the Heart. S. B. Vermel.—p. 204.
Technic for Nephrotomy. A. N. Gagman.—p. 208.
Theory and Treatment of Diabetes. C. von Noorden.—p. 211.
The Heart and Sport. L. F. Dmitrenko.—p. 215.
Levulose-Diabetes. S. J. Shteinberg and V. A. Elberg.—p. 218.
Clinical Significance of Glycolysis. E. D. Pivovarova.—p. 227.
*Vegetative Nervous System in Diabetes. Tsukerstein and Shtraikher.—p. 231.
*New Sign of Banti's Disease. A. M. Gotmakher-Redelman.—p. 236.

The Involuntary Nervous System in Diabetes, and the Action of Insulin on It.—Tsukerstein and Shtraikher conducted their research on seventeen diabetic and five non-diabetic persons. Insulin alone or combined with atropine or epinephrine was injected subcutaneously. He found that most of the diabetics belong to the hypovagotonic group. The lymphocytosis in diabetes corresponds to that from irritation of the parasympathetic nervous system. Insulin provokes irritation of the sympathetic, revealed by dilatation of the pupils and exaggerated secretion of the salivary glands. While the action of epinephrine on the blood sugar is contrary to that of insulin, their influence on the vegetative system is similar.

New Sign of Banti's Disease.—Gotmakher-Redelman uses the Koenecke method for estimating the functional activity of the bone marrow in the differential diagnosis of Banti's splenomegaly. A dose of 10 cc. of a 5 per cent solution of sodium nucleinate is injected into the buttocks, the leukocytes being counted before and after the injection. Reduction or only slight increase (by 20 or 40 per cent) in the number of leukocytes after the injection indicates hypofunction of the bone marrow. A positive reaction (increase of leukocytes by from 40 to 200 per cent) testifies to normal functioning. The reaction was constantly positive in cases of splenomegaly from malaria, leukemia, cirrhosis, etc. It was repeatedly negative in three patients with splenomegaly of the Banti type. In a patient with clinical signs of Banti's disease, the reaction remained positive, and thereupon the Wassermann test was made. It revealed the specific nature of the disease. The reaction was negative in a case of presumed Banti's disease, which further examination proved to be malaria.

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Examination by Way of the Rectum in Obstetrics. Van Tongeren.—p. 841.
*Excess of Male Births. W. A. Mijsberg.—p. 846.
*Insufflation of Air in Diagnosis of Brain Disease. L. van der Horst and W. G. Sillevis Smitt.—p. 854.
Association for Physical Welfare of the Jews. Pinkhof.—p. 876.

The Excess of Male Births.—Mijsberg cites various data which apparently sustain the assumption that the sexes are equally represented at conception, but that the female embryos are less resistant than the male, and a certain number die almost at once and are expelled. He ascribes the lesser resisting powers of the female embryo to the sex chromosomes from both father and mother; the male embryo has only the chromosome from the mother. In war time, the fathers are liable to be physically inferior, which renders the female embryos even more fragile; the proportional number of boy babies that are born is thus correspondingly higher after a war.

By-Effects of Encephalography.—Van der Horst and Smitt state that a tendency to collapse was noted following insufflation of air in two of their forty cases; the procedure was at once arrested and no serious effects followed. They prepare the patient as for a major operation (no food, injection of hyoscin and morphine); patients with epilepsy, paralysis and dementia seem to bear the insufflation especially well. In one case the symptoms suggested a tumor in the frontal lobe; air injected in the lumbar spinal cavity accumulated in and around the cisterna but did not enter the ventricles. Epileptiform seizures followed during the day, which the man did not survive. A large glioma was found in the right frontal lobe. The insufflation should always be done under control of the pressure, and choked disk must be regarded as a positive contraindication to lumbar insufflation. In a few cases they injected air to relieve migraine and epilepsy, but the effect was only transient. In many of the cases the encephalogram was of the greatest value for the diagnosis of the character as well as the site of the lesion.

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*Air Embolism from Criminal Abortion. H. Burgerhout.—p. 925.
Leukorrhea: Etiology and Treatment. G. C. Nijhoff.—p. 932.
*Measurement of the Venous Pressure. J. Goudsmit.—p. 945.
The Magnus and De Kleyn Reflexes in an Epileptiform Attack of Encephalitic Origin. Verhaart.—p. 958.
Certain Workings of the Social Insurance System. D. Brocx.—p. 975.

Air Embolism in the Brain from Attempt to Induce Abortion.—Burgerhout reports a case which teaches the lesson to bear in mind the possibility of air embolism from an attempt to induce abortion when called to a case of sudden and menacing cerebral symptoms in a female patient. In this case the young woman was found unconscious with a syringe for intra-uterine use beside her. The unconsciousness persisted for three days and then alternated with or accompanied attacks of motor symptoms, paralysis and agitation, with ocular phenomena, disturbances in breathing, and glycosuria—all testifying to a diffuse process in the brain, affecting different regions most at different times. The symptoms gradually subsided, nothing being left of them by the end of two months except the amnesia and a certain awkwardness in the use of the right hand. For weeks the patient was unable to read although recognizing the letters separately. The disturbances from air embolism may assume a different course owing to various circumstances impossible to foresee; the drama is not always played out in the heart or lungs.

The Venous Pressure.—Goudsmit expatiates on the valuable information to be derived from comparison of the venous with the arterial systolic and diastolic pressures not only in heart disease but with tumors in the mediastinum, small pelvis, etc. In a case of lung tumor, the venous pressure was 16.5 mm. in the right arm and 11 in the left, revealing the presence of the tumor while the cyanosis was still scarcely apparent. In heart disease, if the venous pressure does not decline under the heart stimulant being used, some other one must be given a trial. The dyspnea and cyanosis subsided in one elderly man after the drug had been changed on account of the persistence of the high venous pressure. The latter then dropped from 17.5 to 12.5 in four days. The prognosis is unfavorable if the venous pressure cannot be reduced, or even rises; it is a more sensitive indicator than the cyanosis or general condition, and warns of the necessity for prompt measures before this is suggested otherwise. It also allows insight into conditions in the right heart in case of insufficiency of the left half.